Second Quarter 2005 Case Closure Request Chevron Station No. 9-0857 1790 Long Beach Boulevard Long Beach, California RWQCB Project No. 908130316

Prepared for

Chevron Environmental Management Company

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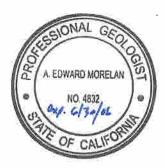




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Appendix A Groundwater Monitoring Well and Soil Boring Logs

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DISTRIBUTION

EXECUTIVE SUMMARY

This report presents a Case Closure Request for Chevron Service Station No. 9-0857 located on the southeast corner at the intersection of Long Beach Boulevard and Pacific Coast Highway in Long Beach, California. Current site features include one 20,000-gallon and one 15,000-gallon gasoline underground storage tanks (USTs) located in the southwestern portion of the site, four dispenser islands located in the central northwest portion of the site, and a station building located in the southeast corner of the site. The site is primarily surrounded by commercial and retail properties.

The site is approximately 30 feet above mean sea level (MSL) and located on the Long Beach Plain within the West Coast Groundwater Basin of the larger Los Angeles Basin. Previous subsurface investigations indicate the site is underlain by silty sand and clayey silt followed by fine and medium grained sand to a maximum explored depth of approximately 50 feet bgs. Groundwater monitoring activities were initiated at the site in February 1986; however, quarterly monitoring was not initiated until May 1992. Groundwater is typically encountered at approximately 30 feet bgs and with the flow direction varying from northwest to southeast at an approximate gradient between 0.001 to 0.003 foot per foot (ft/ft).

The station began operations in the late 1950's and has maintained three generations of USTs with two different station configurations. Environmental investigations at the site began in December 1985, and currently seven groundwater monitoring wells are installed onsite and offsite. One vapor extraction well and five vapor extraction/air sparge wells are installed onsite and offsite, and five additional soil borings have been advanced onsite. A total of 119 soil samples have been collected and submitted for laboratory analysis, and approximately 1,080 cubic yards of soil were removed during UST replacement activities. Two groundwater monitoring wells, two vapor extraction wells, and two observation wells have been destroyed onsite.

Petroleum hydrocarbons in soil have been reported at low to moderate levels in relatively few samples primarily collected beneath the first generation USTs. TPHg and benzene have been reported at moderate levels in soil samples collected beneath the first generation USTs. Analytical data suggest an older petroleum hydrocarbon source was located beneath the first generation USTs; however, an excavation prior to installation of the third generation USTs and vapor extraction activities appear to have largely removed this source. Methyl tertiary butyl ether (MtBE) (using EPA Method 8260) has been reported in one soil sample at 0.019 mg/kg (MW-9 at 30 feet bgs). Tertiary butyl alcohol (TBA) has been reported at 0.410 mg/kg in soil sample MW-9 at 30 feet bgs. Ethyl tertiary butyl ether (ETBE), di-isopropyl ether (DIPE), and tertiary amyl methyl ether (TAME) have never been reported in soil samples.

Petroleum hydrocarbons in groundwater have been reported at low to moderate levels in wells primarily surrounding the first generation and current USTs. Benzene and MtBE concentrations have been reported at moderate levels onsite; however, monitoring data collected over the past several years indicate these concentrations have stabilized or are decreasing. In addition, monitoring data over time suggest that only minor offsite migration of dissolved constituents has occurred. ETBE and DIPE have never been reported in groundwater samples, and TAME has rarely been reported in groundwater. TBA has been reported in groundwater at low to moderate levels in wells that have reported MtBE concentrations. Although recent data indicate an increasing trend, these concentrations appear to be the result of the natural degradation of MtBE and are not likely to be associated with a new chemical of concern. TBA concentrations are anticipated to stabilize and decrease in a fashion similar to MtBE concentrations as biodegradation continues.

The potential exposure route of concern appears to be for residual petroleum hydrocarbons to migrate to a water supply well and/or surface water body. There are no active production wells used for drinking water purposes located near the site, and the nearest water body is the Los Angeles River located approximately 1 mile west of the site. Based on site conditions and the local geology, it appears that the migration of MtBE to either of these receptors of concern is unlikely.

Based on previous investigations, the site appears to be adequately assessed. Current site conditions indicate the site poses minimal risk to human health and/or the environment and should be evaluated for case closure.

1.0 INTRODUCTION

On behalf of Chevron Environmental Management Company (CEMC), Science Applications International Corporation (SAIC) is pleased to submit this report for Service Station No. 9-0857, located at 1790 Long Beach Boulevard, Long Beach, California (Plate 1).

The purpose of the report is to provide a case closure request characterizing the geologic, hydrogeologic, and environmental conditions at the site. This closure request is intended to:

- Identify how the distribution of petroleum hydrocarbons is changing in space and time,
- Identify potential current and future receptors, and
- Identify environmental issues of concern.

This report was developed in general accordance with the Los Angeles County Department of Public Works (LACDPW) 1996 Guidance for Petroleum-Impacted Sites: Soil Screening Levels; the 1994 State of California Code of Regulations Title 23, Division 3, Chapter 16, Underground Storage Tank Regulations; the LACDPW "Guidance for Report Submittals - Revised June 1993"; and current guidelines by the County of Los Angeles.

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2.0 SITE BACKGROUND

2.1 SITE DESCRIPTION

The site is an active service station located on the southeast corner at the intersection of Long Beach Boulevard and Pacific Coast Highway in Long Beach, California (Plate 1). Current site features include one 20,000-gallon and one 15,000-gallon gasoline underground storage tanks (USTs) located in the southwestern portion of the site, four dispenser islands located in the central northwest portion of the site, and a station building located in the southeast corner of the site. The site is primarily surrounded by commercial and retail properties. A site vicinity map is presented as Plate 2.

Currently, seven groundwater monitoring wells (MW-2 and MW-4 through MW-9), one vapor extraction well (VW-2), five vapor extraction/air sparge wells (VS-1 through VS-5), and two observation wells (W-2 and W-5) are installed onsite and offsite. Five additional soil borings (B1 through B5) have been advanced onsite, and 119 soil samples have been collected and submitted for laboratory analysis. Two groundwater monitoring wells (MW-1 and MW-3), two vapor extraction wells (VW-3 and VW-4), and two observation wells (W-3 and W-4) have been destroyed onsite. Approximately 1,080 cubic yards of soil were removed during UST replacement activities. A site plan showing the locations of all wells, soil borings, soil samples, cross sections locations, and station features is provided as Plate 3. Historical soil analytical data and groundwater monitoring gauging and analytical data are provided in Tables 1 and 2, respectively.

2.2 REGIONAL AND SITE-SPECIFIC GEOLOGY

The site is approximately 30 feet above mean sea level (MSL) and located on the Long Beach Plain within the larger Los Angeles Basin (Plates 4 and 5). The United States Geological Survey (USGS) map coordinates for the site are Section 36, Township 4 South, and Range 13 West, Long Beach, California 7.5-minute Quadrangle topographic series, California (Plate 1). Structural features in the area include the Gardena syncline (located approximately 1,800 feet north of the site), the Cherry Hill Fault (located approximately 0.75 mile northeast of the site), the Long Beach anticline (located approximately 1 mile northeast of the site), and the Los Angeles River (located approximately 1 mile west of the site). The Pacific Ocean is located approximately 2 miles south of the site (California Department of Water Resources [CDWR], 1961).

Geologic units below the site may include members of the Lakewood and San Pedro Formations; however, units beneath the site are not differentiated (Plates 4 and 5) (CDWR, 1961).

Previous subsurface investigations indicate the site is underlain by silty sand and clayey silt followed by fine and medium grained sand to a maximum explored depth of approximately 50 feet below ground surface (bgs). These soil types are shown in cross sections presented as Plates 6 and 7, and historical groundwater monitoring well and soil boring logs are provided as Appendix A.

2.3 REGIONAL AND SITE-SPECIFIC HYDROGEOLOGY

The site is located in the West Coast Groundwater Basin within the larger Los Angeles Basin. Within the basin, there are many thin, shallow, and discontinuous semiperched water-bearing zones, along with regionally extensive aquifers within Pleistocene-age formations. The two major geologic formations within the basin that contain regionally extensive aquifers are the Pleistocene-age Lakewood and San Pedro Formations; however, it appears that neither of these formations have been differentiated beneath the site (CDWR, 1961).

Groundwater monitoring activities were initiated at the site in February 1986; however, quarterly monitoring was not initiated until May 1992. Currently, seven groundwater monitoring wells (MW-2 and MW-4 through MW-9) are installed onsite and offsite. Groundwater is typically encountered at approximately 30 feet bgs and with the flow direction varying from northwest to southeast at an approximate gradient between 0.001 to 0.003 ft/ft foot per foot (ft/ft). Historical groundwater monitoring and gauging data are provided in Table 2. Site maps showing historical groundwater elevations through time and seasonal changes are provided as Plates 8 and 9.

2.4 UNDERGROUND STORAGE TANK HISTORY

The station began operations in the late 1950's and has maintained three generations of USTs with two different station configurations. The first generation USTs consisted of five single-walled steel tanks (one 2,000-gallon unleaded gasoline, one 3,000-gallon unleaded gasoline, two 5,000-gallon supreme and regular gasoline, and one 550-gallon used-oil). These first-generation gasoline USTs were located in the southwest corner of the site (near the current USTs), four dispenser islands were located in the north and west-central portions of the site, the station building was located in the center of the site, and one used-oil UST was located adjacent to the southeast corner of the station building (Groundwater Technology, Inc. [GTI], 1986). During removal of these USTs in February 1988, the tanks were reported to be approximately 30 years old and degradation of the supreme tank in the area of the fill pipe was also reported (GTI, 1988b).

The second generation gasoline USTs (three fiberglass/steel 10,000-gallon USTs) were installed in the northwest corner of the site, and the second generation used-oil (one fiberglass/steel 1,000-gallon UST)

was installed in its original location adjacent to the station building. Four dispenser islands were located in the northern portion of the site with one dispenser island in the western portion of the site. The station building remained in its original position in the center of the site (GTI, 1988b). In September 1998, the second generation USTs were replaced (IT Group, Inc. [IT], 1998).

The third generation gasoline USTs (one fiberglass 20,000-gallon unleaded gasoline and one 15,000-gallon supreme gasoline USTs) were installed in the southwest corner of the site, and the used-oil UST was not replaced at the site. Four dispenser islands were installed in the central northwestern portion of the site, and the station building was relocated to the southeastern corner of the site (IT, 1998).

2.5 PREVIOUS ENVIRONMENTAL ACTIVITIES

Environmental investigations began at the site in December 1985; historical soil and groundwater analytical data are provided in Tables 1 and 2, respectively. Site assessment, remedial activities, and station upgrade work have included the following:

- UST replacement activities, groundwater monitoring well and observation well installation activities, and soil sampling activities between December 1985 and November 1988 (Plate 10),
- UST replacement and soil sampling activities in September 1998 (Plate 11), and
- Groundwater monitoring well and vapor extraction/air sparge well installation activities along with soil boring advancement activities between June 1999 and August 2002 (Plate 12).

Between December 1985 and February 1986, the first generation USTs were removed and replaced, and one groundwater monitoring well (MW-1) and four vadose zone observation wells (W-2 through W-5) were installed under the supervision of GTI. Eleven soil samples were collected and submitted for laboratory analysis. Total recoverable petroleum hydrocarbons (TRPH) was reported in four soil samples ranging from 1.5 milligrams per kilogram (mg/kg, W-5 at 15 and 20 feet bgs) to 150 mg/kg (W-3 at 15 feet bgs). One soil sample (W-2 at 15 feet bgs) was analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) concentrations, and concentrations were reported at 0.49 mg/kg, 0.61 mg/kg, 0.26 mg/kg, and 2.8 mg/kg, respectively (GTI, 1986). No soil samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg).

In December 1987, Two groundwater monitoring wells (MW-2 and MW-3) and one dual-nested groundwater monitoring well/vapor extraction well (MW-4/VE-1) were installed at the site under the supervision of GTI. Fourteen soil samples were collected and submitted for laboratory analysis. TPHg (9.0 mg/kg) was reported in one soil sample (MW-2 at 30 feet bgs), and BTEX concentrations were not reported in any soil samples (GTI, 1988a).

In February 1988, the station was reconstructed under the supervision of GTI. All station features including five USTs (second generation), four dispenser islands, and associated piping were replaced from the site. The second generation USTs were installed in the northwest corner of the site with the four dispenser islands located in the northern portion of the site and one dispenser island in the western portion of the site. Seven soil samples were collected 4 to 5 feet below the USTs and submitted for laboratory analysis, and the UST excavation area was reported to be approximately 40 feet by 20 feet and 15 feet deep. Petroleum hydrocarbons were reported in most soil samples collected at moderate levels. The highest concentrations of TPHg (17,100 mg/kg), benzene (210 mg/kg), toluene (1,290 mg/kg), and total xylenes (4,460 mg/kg) were reported in soil sample S1 at 15 feet bgs, and the highest concentration of ethylbenzene (313 mg/kg) was reported in soil sample S2B at 15 feet bgs. (GTI, 1988b).

In November 1988, one groundwater monitoring well (MW-5) was installed at the site under the supervision of GTI. Petroleum hydrocarbons were not reported in the one soil sample collected at 35 feet bgs (GTI, 1989a).

In August 1989, a baildown test was performed on well MW-1 to determine the viability of installing a non-aqueous phase liquid (NAPL) recovery system under the supervision of GTI (GTI, 1989b). However, it appears that a NAPL recovery system was never installed at the site.

In November 1989, a vapor extraction pilot test utilizing observation well W-3 was performed under the supervision of GTI. One vapor sample was collected after 45 minutes and had reported concentrations of 65,000 parts per million by volume (ppmv). A radius of influence (ROI) of approximately 40 feet was calculated for the site, and vapor extraction was recommended as a viable remedial option for the site (GTI, 1989c).

In February 1991, a remedial action plan (RAP) was proposed under the supervision of GTI. The RAP recommended operation of a soil vapor extraction (SVE) system connected to six wells (MW-1, W-3, W-4, and proposed wells VW-2 through VW-4) (GTI, 1991).

In November 1992, three vapor extraction wells (VW-2 through VW-4) were installed under the supervision of GTI. Petroleum-hydrocarbon odors were noted in the soil boring logs for all wells; however, no soil samples were collected and submitted for laboratory analysis (GTI, 1992).

Between April 1993 and July 1996, a SVE system operated periodically at the site under the supervision of EnviroSupply & Services, Inc. (EnviroSupply), and it was shut down due to low influent concentrations. Approximately 6,897 pounds of petroleum hydrocarbons were destroyed during system

operations (Fluor Daniel GTI, 1997).

In November 1997, environmental case closure was requested, and subsequently denied, for the site under the supervision of Fluor Daniel GTI (Fluor Daniel GTI, 1997).

Between September and October 1998, the second generation USTs, dispenser islands, and station building were removed and replaced under the supervision of IT. Prior to removal activities, six wells (W-3, W-4, VW-3, VW-4, MW-1, and MW-3) were abandoned at the site. Eighteen soil samples were collected and submitted for laboratory analysis. The third generation gasoline USTs were installed in the southwestern portion of the site (near the first generation USTs), and the used-oil UST was not replaced at the site. Four dispenser islands were installed in the central northwestern portion of the site with the station building in the southeastern corner of the site. TPHg, BTEX, and total lead concentrations were not reported in any of the soil samples. Methyl tertiary butyl ether (MtBE) was reported in three samples ranging in concentration from 0.08 mg/kg (T2E at 14 feet bgs) to 4.0 mg/kg (T3E at 14 feet bgs). The one soil sample collected beneath the used-oil UST had a reported TRPH of 82 mg/kg. Approximately 1,080 cubic yards of soil were removed from beneath the site during these activities (IT, 1998).

Between June and July 1999, five dual-nested soil-vapor extraction/air-sparge wells (VS-1 through VS-5), one dual-nested groundwater monitoring/SVE well (MW-6/VE-2), and one groundwater monitoring well (MW-7) were installed at the site under the supervision of IT. Twenty-six soil samples were collected and submitted for laboratory analysis. The highest concentration of TPHg (9,000 mg/kg) was reported in VS-5 at 29 feet bgs, and the highest concentration of benzene (0.20 mg/kg) was reported in VS-3 at 35 feet bgs. MtBE was not reported in any soil samples (IT, 1999).

In October 2001, five soil borings (B1 through B5) were advanced at the site under the supervision of Harding ESE, Inc. (Harding ESE). Soil borings B1 and B2 were drilled at approximately 30-degree angles with the other borings advanced vertically. Thirty soil samples were collected and submitted for laboratory analysis. Petroleum hydrocarbons were not reported in any of the soil samples collected (Harding ESE, 2001).

In August 2002, two groundwater monitoring wells (MW-8 and MW-9) were installed at the site under the supervision of Harding ESE. Twelve soil samples were collected and submitted for laboratory analysis. MtBE and tertiary butyl ether (TBA) were reported at 0.019 mg/kg and 0.410 mg/kg in soil sample MW-9 at 30 feet bgs (Harding ESE, 2002).

3.0 SITE CHARACTERIZATION

3.1 PETROLEUM HYDROCARBONS IN SOIL

The distribution of petroleum hydrocarbons in soil is based on 119 soil samples collected and submitted for laboratory analysis between February 1986 and August 2002. Petroleum hydrocarbons within the vadose zone (0 to 29 feet bgs) have been reported in 22 of 94 soil samples, and petroleum hydrocarbons within the saturated zone (29.5 or more feet bgs) have been reported in 10 of 25 soil samples.

3.1.1 Cleanup Criteria

The RWQCB has stated that the maximum soil screening levels (MSSLs) should be used to evaluate whether remedial action is required at a site (RWQCB, 1996). The MSSLs are based on the attenuation factor for petroleum hydrocarbons in soil to migrate through a particular soil type to the first available water-bearing zone beneath the site. Soils beneath the site are considered to be non-water-bearing; therefore, to determine MSSLs for the site, approximately 30 feet of silt was assumed to underlie the site. Using this information, the MSSLs for BTEX, TPHg, and TRPH (defined here to be C₂₃ to C₃₂) were determined to be 0.022 mg/kg, 1.5 mg/kg, 4.0 mg/kg, 10 mg/kg, 500 mg/kg, and 10,000 mg/kg, respectively.

3.1.2 Distribution

The MSSLs for TPHg and BTEX were exceeded in most soil samples collected beneath the first generations USTs. In addition, the MSSLs for TPHg and BTEX were also exceeded in soil samples VS-1, VS-5, and collected between 29 and 35 feet bgs.

Petroleum hydrocarbons in soil have been reported at low to moderate levels in relatively few samples primarily collected beneath the first generation USTs. TPHg and benzene have been reported at moderate levels in soil samples collected at 5 feet bgs beneath the first generation USTs. Analytical data suggest an older petroleum hydrocarbon source was located beneath the first generation USTs; however, an excavation prior to installation of the third generation USTs and vapor extraction activities appear to have largely removed this source. MtBE (using EPA Method 8020) has been reported in four soil samples ranging in concentration from 0.080 mg/kg (T2E at 14 feet bgs) to 4.0 mg/kg (T3E at 14 feet bgs), and MtBE (using EPA Method 8260) has been reported in one soil sample at 0.019 mg/kg (MW-9 at 30 feet bgs). TBA has been reported at 0.410 mg/kg in soil sample MW-9 at 30 feet bgs. Ethyl tertiary butyl ether (ETBE), di-isopropyl ether (DIPE), and tertiary amyl methyl ether (TAME) have never been reported in soil samples.

Historically, the highest concentrations of TPHg and BTEX were reported at 17,100 mg/kg (S1 at 15 feet

bgs), 210 mg/kg (S1 at 15 feet bgs), 1,290 mg/kg (S1 at 15 feet bgs), 313 mg/kg (S2B at 15 feet bgs), and 4,460 mg/kg (S1 at 15 feet bgs). The highest MtBE concentration in soil was 0.019 mg/kg (using EPA Method 8260B) in sample MW-9 at 30 feet bgs. The distributions of TPHg, benzene, and MtBE concentrations in soil within the vadose and saturated zones are shown on Plates 13 and 14.

3.2 PETROLEUM HYDROCARBONS IN GROUNDWATER

Groundwater monitoring activities were initiated at the site in February 1986; however, quarterly monitoring activities were not initiated until May 1992. Currently, seven groundwater monitoring wells are installed onsite and offsite.

3.2.1 Cleanup Criteria

The Maximum Contaminant Levels (MCLs) are the groundwater cleanup goals that the RWQCB currently enforces. The MCLs for BTEX and MtBE in groundwater are 1 μ g/L, 150 μ g/L, 300 μ g/L, 1,750 μ g/L, and 13 μ g/L, respectively. These cleanup goals are for drinking water purposes and may not be appropriate for all areas within the Los Angeles Basin. Therefore, less conservative cleanup goals should be considered based on the local geologic and hydrogeologic conditions surrounding the site and the potential risk for petroleum hydrocarbon migration to a regionally extensive aquifer.

3.2.2 Distribution

Based on monitoring data collected over the past couple of years, the MCLs for benzene and MtBE have been exceeded in monitoring wells surrounding the first generation and current USTs. Benzene concentrations typically exceed the MCL in wells MW-5 through MW-7, and MtBE concentrations typically exceed the MCL in wells MW-4 through MW-7.

Petroleum hydrocarbons in groundwater have been reported at low to moderate levels in wells primarily surrounding the first generation and current USTs. Benzene and MtBE concentrations have been reported at moderate levels onsite; however, monitoring data collected over the past several years indicate that these concentrations have stabilized or are decreasing. In addition, monitoring data over time suggest that only minor offsite migration of dissolved constituents has occurred.

ETBE and DIPE have never been reported in any groundwater samples, and TAME has rarely been reported in groundwater. TBA has been reported in groundwater at low to moderate levels in wells that have reported MtBE concentrations. Although recent data indicate an increasing trend, these concentrations appear to be the result of the natural degradation of MtBE and are not likely to be associated with a new chemical of concern. TBA concentrations are anticipated to stabilize and decrease in fashion similar to MtBE concentrations as biodegradation continues.

Based on quarterly groundwater monitoring data since January 2000, the highest concentrations of TPHg, BTEX, and MtBE have been 71,800 μ g/L (MW-6 in January 2000), 1,300 μ g/L (MW-6 in January 2000), 2,000 μ g/L (MW-6 in January 2000), 2,400 μ g/L (MW-6 in July 2001), 4,890 μ g/L (MW-6 in October 2001), and 4,080 μ g/L (MW-6 in November 2000, using EPA Method 8260B), respectively. Historical trends of TPHg, benzene, and MtBE concentrations in groundwater through time and seasonal changes are presented as Plates 15 and 16.

3.3 REMEDIATION HISTORY

Based on previous assessments, petroleum hydrocarbons have primarily been limited to the area of the first generation and current USTs. Remedial activities surrounding this area have included an excavation prior to installation of the current USTs in September 1998. Soils beneath the first generation USTs have been removed to approximately 15 feet bgs. Active remediation activities have included operation of a SVE system between April 1993 and July 1996. The system was subsequently shut down due to low influent concentrations, and approximately 6,897 pounds of petroleum hydrocarbons were destroyed during system operation.

3.4 RISK EVALUATION

In order to evaluate health risks associated with current conditions at the site, an evaluation of the various exposure pathways and the threats to human health and the environment has been performed. Ingestion or dermal contact is not considered to be a significant threat due to the fact that the near-surface soil that contains petroleum hydrocarbons is paved. The inhalation of petroleum hydrocarbon vapors from cracks or seams in the pavement is not considered to be a significant threat, as vapors would be mixed and diluted with ambient air; however, impacts associated with these vapors to indoor air quality were not evaluated. Vapors could pose an explosion threat to underground utilities and a health threat to workers if vapors were to enter confined spaces such as pipelines or man-ways. As was the case for soil, the inhalation of vapors generated from groundwater or dermal contact are not considered to be significant risks due to limited potential for exposure. The potential threat caused by the ingestion of groundwater does not appear to be significant.

3.5 WELL AND CONDUIT SURVEY

A survey of active and inactive wells within a 1-mile radius of the site was obtained from the Los Angeles County Department of Public Works Hydrologic Records (LACDPW). No active municipal supply wells were identified in the survey, and using the state's database of environmental regulated facilities, Geotracker (http://geotracker.swrcb.ca.gov), no public supply wells were identified near the site (LACDPW, 2005).

4.0 CASE CLOSURE REQUEST

Based on previous assessments and current site conditions, the site appears to be adequately assessed. Petroleum hydrocarbons in soil and groundwater have primarily been reported at low to moderate levels near the first generation and current USTs. Groundwater monitoring data indicate overall stabilized or decreasing trends for benzene and MtBE concentrations in groundwater. TBA concentrations appear to have increased; however, these concentrations appear to be the result of the natural degradation of MtBE and are not likely associated with a new chemical of concern. TBA concentrations are anticipated to stabilize and decrease in a fashion similar to MtBE concentrations as biodegradation continues.

The potential exposure route of concern appears to be for residual petroleum hydrocarbons to migrate to a water supply well and/or surface water body. There are no active production wells used for drinking water purposes located near the site, and the nearest water body is the Los Angeles River located approximately 1 mile south of the site. Based on site conditions and the local geology, it appears that the migration of MtBE to either of these receptors of concern appears unlikely.

Based on previous investigations and current site conditions, the site appears to be adequately assessed and should be evaluated for case closure.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the information presented in this report the following conclusions and recommendations are made:

- The site is approximately 30 feet above mean sea level (MSL) and located on the Long Beach Plain within the West Coast Groundwater Basin of the larger Los Angeles Basin. Previous subsurface investigations indicate the site is underlain by silty sand and clayey silt followed by fine and medium grained sand to a maximum explored depth of approximately 50 feet bgs. Groundwater monitoring activities were initiated at the site in February 1986; however, quarterly monitoring was not initiated until May 1992. Groundwater is typically encountered at approximately 30 feet bgs and with the flow direction varying from northwest to southeast at an approximate gradient between 0.001 to 0.003 foot per foot (ft/ft).
- The station began operations in the late 1950's and has maintained three generations of USTs with two different station configurations. Environmental investigations at the site began in December 1985, and currently seven groundwater monitoring wells are installed onsite and offsite. One vapor extraction well and five vapor extraction/air sparge wells are installed onsite and offsite, and five additional soil borings have been advanced onsite. A total of 119 soil samples have been collected and submitted for laboratory analysis, and approximately 1,080 cubic yards of soil were removed during UST replacement activities. Two groundwater monitoring wells, two vapor extraction wells, and two observation wells have been destroyed onsite.
- Petroleum hydrocarbons in soil have been reported at low to moderate levels in relatively few samples primarily collected beneath the first generation USTs. TPHg and benzene have been reported at moderate levels in soil samples collected beneath the first generation USTs. Analytical data suggest an older petroleum hydrocarbon source was located beneath the first generation USTs; however, an excavation prior to installation of the third generation USTs and vapor extraction activities appear to have largely removed this source. Methyl tertiary butyl ether (MtBE) (using EPA Method 8260) has been reported in one soil sample at 0.019 mg/kg (MW-9 at 30 feet bgs). Tertiary butyl alcohol (TBA) has been reported at 0.410 mg/kg in soil sample MW-9 at 30 feet bgs. Ethyl tertiary butyl ether (ETBE), di-isopropyl ether (DIPE), and tertiary amyl methyl ether (TAME) have never been reported in soil samples.
- Petroleum hydrocarbons in groundwater have been reported at low to moderate levels in wells primarily surrounding the first generation and current USTs. Benzene and MtBE concentrations have been reported at moderate levels onsite; however, monitoring data collected over the past several years indicate these concentrations have stabilized or are decreasing. In addition, monitoring data over time suggest that only minor offsite migration of dissolved constituents has occurred. ETBE and DIPE have never been reported in groundwater samples, and TAME has rarely been reported in groundwater. TBA has been reported in groundwater at low to moderate levels in wells that have reported MtBE concentrations. Although recent data indicate an increasing trend, these concentrations appear to be the result of the natural degradation of MtBE and are not likely to be associated with a new chemical of concern. TBA concentrations are anticipated to stabilize and decrease in a fashion similar to MtBE concentrations as biodegradation continues.

- The potential exposure route of concern appears to be for residual petroleum hydrocarbons to migrate to a water supply well and/or surface water body. There are no active production wells used for drinking water purposes located near the site, and the nearest water body is the Los Angeles River located approximately 1 mile west of the site. Based on site conditions and the local geology, it appears that the migration of MtBE to either of these receptors of concern is unlikely.
- Based on previous investigations, the site appears to be adequately assessed. Current site
 conditions indicate the site poses minimal risk to human health and/or the environment and
 should be evaluated for case closure.

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Third Quarter 2005 Case Closure Request Chevron Station No. 9-0857 1790 Long Beach Boulevard Long Beach, California RWQCB Project No. 908130316

September 30, 2005

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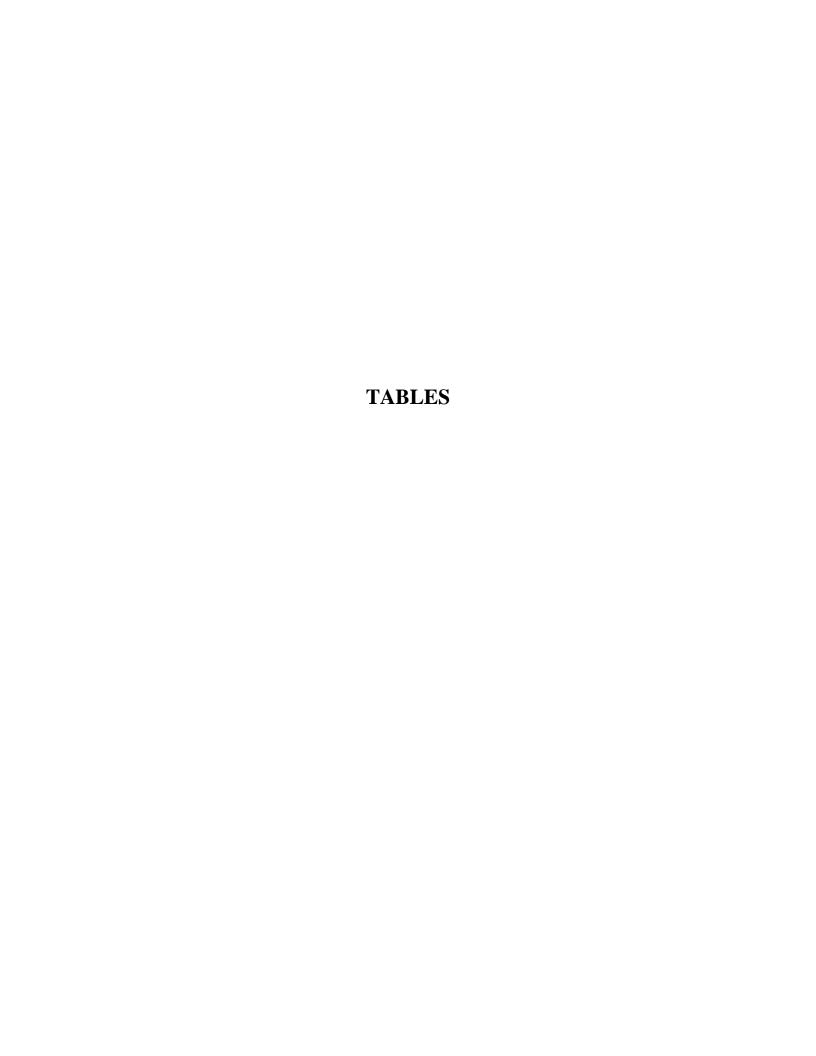


Table 1. Historical Soil Sample Analytical Results Chevron Environmental Management Company Service Station No. 9-0857 1790 North Long Beach Boulevard, Long Beach, California

		Sample	EPA Method 8015/8260B (mg/kg)		EPA Meth	nod 8020A/8021	B (mg/kg)			EPA M	Tethod 8260B ((mg/kg)		EPA Method 418.1 (mg/kg)	EPA Method 6010 (mg/kg)
Committee ID	C1- D-4-	Depth	TDHe	Dangana	Toluene	Ethylbenzene	Total	MtBE	MtBE	ETDE	DIDE	TAME	TBA	TRPH	T 4
Sample ID	Sample Date	(feet bgs)	TPHg	Benzene	Toluene	Eurytoenzene	Xylenes	MIDE	MIDE	ETBE	DIPE	TAME	IBA	IKPH	Lead
MW-1	2/21/1986	15												<1	
MW-1	2/21/1986	20												<1	
MW-1	2/21/1986	35												<1	
W-2	2/21/1986	15		0.490	0.610	0.260	2.8							21	< 0.10
W-2	2/21/1986	20												<1	
W-3	2/21/1986	15												150	
W-3	2/21/1986	20												<1	
*** .															
W-4	2/21/1986	15												<1	
W-4	2/21/1986	20												<1	
W-5	2/21/1986	15												1.5	
W-5	2/21/1986	20												1.5	
*** 5	2/21/1/00													1.0	
MW-2	12/16/1987	5	<1	< 0.5	< 0.5	<0.5	< 0.5								
MW-2	12/16/1987	10	<1	< 0.5	< 0.5	< 0.5	<0.5								
MW-2	12/16/1987	20	<1	< 0.5	< 0.5	< 0.5	< 0.5								
MW-2	12/16/1987	30	9.0	< 0.5	< 0.5	< 0.5	< 0.5								0.210
MW-2	12/16/1987	36	<1	< 0.5	< 0.5	< 0.5	< 0.5								
MW-3	12/18/1987	5	<1	< 0.5	< 0.5	< 0.5	< 0.5								
MW-3	12/18/1987	10	<1	< 0.5	< 0.5	< 0.5	< 0.5								
MW-3	12/18/1987	20	<1	<0.5	<0.5	<0.5	<0.5								
MW-3	12/18/1987	30	<1	<0.5	<0.5	<0.5	<0.5								
MW-3	12/18/1987	35	<1	< 0.5	< 0.5	< 0.5	< 0.5								
MW-4/VE-1	12/18/1087	10	<1	<0.5	<0.5	<0.5	<0.5								
MW-4/VE-1		20	<1	<0.5	<0.5	<0.5	<0.5								
MW-4/VE-1		30	<1	<0.5	<0.5	<0.5	<0.5								
MW-4/VE-1		35	<1	<0.5	<0.5	<0.5	<0.5								
		55	1.2	1010	1010	10.0	1010								
S1	2/9/1988	15	17,100	210	1,290	278	4,460								
S2A	2/9/1988	15	6,830	49.9	529	128	2,760								
S2B	2/9/1988	15	14,100	127	716	313	3,110								
S3A	2/9/1988	15	7,090	47.7	677	153	2,420								
S3B	2/9/1988	15	3,040	<5	81.4	30.3	542								
S4	2/9/1988	15	1,000	< 0.5	2.9	1.7	52.5								

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		Sample	EPA Method 8015/8260B (mg/kg)		EPA Metl	nod 8020A/8021	B (mg/kg)			ЕРА М	ethod 8260B ((mg/kg)		EPA Method 418.1 (mg/kg)	EPA Method 6010 (mg/kg)
Sample ID	Sample Date	Depth (feet bgs)	TPHg	Benzene	Toluene	Ethylbenzene	Total Xylenes	MtBE	MtBE	ETBE	DIPE	TAME	TBA	TRPH	Lead
WO5	2/9/1988	(leet bgs)		Delizelle 		Ethyloenzene	Aylelles	WIDE	MIDE	EIDE 	DIFE 	I AIVIE	1DA 	<1 <1	Lead
WO3	2/9/1900	9												<1	
MW-5	11/15/1988	35	<1	<0.5	<0.5	<0.5	< 0.5								
11111 5	11, 10, 1, 00		**	1010	10.0	10.0	10.0								
D1	9/28/1998	2	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035							<5
D2	9/28/1998	2	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035							<5
D3	9/28/1998	2	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035							<5
D4	9/28/1998	2	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035							<5
D5	9/28/1998	2	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035							<5
D6	9/28/1998	2	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035							<5
D7	9/28/1998	2	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035							<5
D8	9/28/1998	2	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035							<5
D9	9/28/1998	2	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035							<5
D10	9/28/1998	2	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035							<5
D11	9/28/1998	2	<10	< 0.005	< 0.005	< 0.005	< 0.015	0.6							<5
T1W	9/28/1998	14	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035							<5
T1E	9/28/1998	14	<10	< 0.005	< 0.005	< 0.005	< 0.015	0.5							<5
T2W	9/28/1998	14	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035							<5
T2E	9/28/1998	14	<10	< 0.005	< 0.005	< 0.005	< 0.015	0.08							<5
T3W	9/28/1998	14	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035							<5
T3E	9/28/1998	14	<10	< 0.005	< 0.005	< 0.005	< 0.015	4.0							<5
T4	9/28/1998	8	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035						82	32.3
VS-1	6/30/1999	25	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035							
VS-1	6/30/1999	29	3,580	< 0.005	74	38	285	< 0.035							
VS-1	6/30/1999	35	<10	0.030	0.20	<0.005	0.10	<0.035							
VS-1	6/30/1999	41	<10	0.020	0.60	0.10	0.90	< 0.035							
7/0.2	6/20/1000	1.5	42	0.10	2.2	0.50	2.0	0.025							
VS-2	6/30/1999	15	42	0.10	2.3	0.50	2.9	<0.035							
VS-2 VS-2	6/30/1999 6/30/1999	25 29	<10	<0.005 <0.005	<0.005	<0.005	0.060 <0.015	<0.035 <0.035							
VS-2 VS-2	6/30/1999	35	<10 <10	<0.005	<0.005	<0.005	<0.015	<0.035							
V S-2	0/30/1999	33	<10	<0.005	<0.005	< 0.005	<0.015	<0.033							
VS-3	7/1/1999	20	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035							
VS-3	7/1/1999	29	<10	< 0.005	< 0.005	< 0.005	< 0.015	<0.035							
VS-3	7/1/1999	35	<10	0.003	0.90	0.090	0.50	<0.035							
¥ 13-3	1/1/1777	JJ	\10	0.20	0.70	0.070	0.50	<0.033							
VS-4	7/1/1999	25	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035							
VS-4	7/1/1999	29	<10	<0.005	0.110	0.020	0.140	<0.035							
10-4	1/1/1777	4.7	\10	₹0.00 5	0.110	0.040	V.17U	₹0.033							

Table 1. Historical Soil Sample Analytical Results Chevron Environmental Management Company Service Station No. 9-0857 1790 North Long Beach Boulevard, Long Beach, California

		Sample	EPA Method 8015/8260B (mg/kg)		EPA Metl	nod 8020A/8021	B (mg/kg)			EPA M	lethod 8260B	(mg/kg)		EPA Method 418.1 (mg/kg)	EPA Method 6010 (mg/kg)
		Depth	TEDAY		m 1	P.1. II	Total	Marie	1600					TTD DVV	
	Sample Date	(feet bgs)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MtBE	MtBE	ETBE	DIPE	TAME	TBA	TRPH	Lead
VS-4	7/1/1999	35	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035							
VS-5	7/1/1999	25	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035							
VS-5	7/1/1999	29	9,000	< 0.005	109	116	892	<35							
VS-5	7/1/1999	35	90	0.040	4.15	1.07	6.520	< 0.14							
VS-5	7/1/1999	41	<10	< 0.005	< 0.005	< 0.005	0.060	< 0.035							
MW-6/VE-2	7/2/1999	25	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035							
MW-6/VE-2	7/2/1999	29	44	< 0.005	2.10	0.740	4.9	< 0.14							
MW-6/VE-2	7/2/1999	35	<10	< 0.005	0.060	0.030	0.180	< 0.035							
MW-6/VE-2	7/2/1999	40	<10	0.020	0.090	0.040	0.190	< 0.035							
MW-7	7/2/1999	10	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035							
MW-7	7/2/1999	25	<10	< 0.005	0.090	0.020	0.110	< 0.035							
MW-7	7/2/1999	29	<10	< 0.005	< 0.005	< 0.005	< 0.015	< 0.035							
MW-7	7/2/1999	40	<10	< 0.005	< 0.005	0.020	0.140	< 0.035							
B1	10/29/2001	7	<0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		3.6
B1	10/29/2001	10	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		3.4
B1	10/29/2001	15	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		<10
B1	10/29/2001	20	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		2.1
B1	10/29/2001	25	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		<10
B1	10/29/2001	30	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		2.2
B2	10/29/2001	7	<0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		5.8
B2	10/29/2001	10	<0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		3.9
B2	10/29/2001	15	<0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		4.0
B2	10/29/2001	20	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		<10
B2	10/29/2001	25	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		<10
B2	10/29/2001	30	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		<10
D2	10/20/2001	7	-0.5	<0.005	<0.00F	<0.005	<0.005	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		2.5
B3 B3	10/29/2001	7 10	<0.5 <0.5	<0.005 <0.005	<0.005	<0.005 <0.005	<0.005 <0.005	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		3.5
B3	10/29/2001 10/29/2001	15	<0.5	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		3.9
В3	10/29/2001	20	<0.5	< 0.005	<0.005	< 0.005	< 0.005	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010		<10
B3	10/29/2001	25	<0.5	< 0.005	< 0.005	< 0.005	< 0.005	<0.010	<0.010	<0.010	< 0.010	<0.010	< 0.010		<10
B3	10/29/2001	30	<0.5	< 0.005	< 0.005	< 0.005	< 0.005	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010		7.2
B4	10/29/2001	7	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		3.8
B4	10/29/2001	10	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		5.7

Table 1. Historical Soil Sample Analytical Results Chevron Environmental Management Company Service Station No. 9-0857 1790 North Long Beach Boulevard, Long Beach, California

		Sample	EPA Method 8015/8260B (mg/kg)		EPA Meth	od 8020A/8021	B (mg/kg)			EPA M	lethod 8260B ((mg/kg)		EPA Method 418.1 (mg/kg)	EPA Method 6010 (mg/kg)
		Depth					Total								
Sample ID	Sample Date	(feet bgs)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MtBE	MtBE	ETBE	DIPE	TAME	TBA	TRPH	Lead
B4	10/29/2001	15	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		2.3
B4	10/29/2001	20	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		<10
B4	10/29/2001	25	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		<10
B4	10/29/2001	30	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		<10
B5	10/29/2001	7	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		5.7
B5	10/29/2001	10	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		2.2
B5	10/29/2001	15	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		2.6
B5	10/29/2001	20	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		6.1
B5	10/29/2001	25	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		<10
B5	10/29/2001	30	< 0.5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010		4.9
MW-8	8/22/2002	5	< 0.20	< 0.0016	< 0.0016	< 0.0016	< 0.0016		< 0.0039	< 0.0039	< 0.0039	< 0.0039	< 0.016		
MW-8	8/22/2002	10	< 0.250	< 0.002	< 0.002	< 0.002	< 0.002		< 0.005	< 0.005	< 0.005	< 0.005	< 0.020		
MW-8	8/22/2002	15	< 0.220	< 0.0018	< 0.0018	< 0.0018	< 0.0018		< 0.0044	< 0.0044	< 0.0044	< 0.0044	< 0.018		
MW-8	8/22/2002	20	< 0.30	< 0.0024	< 0.0024	< 0.0024	< 0.0024		< 0.0061	< 0.0061	< 0.0061	< 0.0061	< 0.024		
MW-8	8/22/2002	25	< 0.250	< 0.002	< 0.002	< 0.002	< 0.002		< 0.005	< 0.005	< 0.005	< 0.005	< 0.020		
MW-8	8/22/2002	30	< 0.250	< 0.002	< 0.002	< 0.002	< 0.002		< 0.005	< 0.005	< 0.005	< 0.005	< 0.020		
MW-9	8/22/2002	5	< 0.230	< 0.0018	< 0.0018	< 0.0018	< 0.0018		< 0.0045	< 0.0045	< 0.0045	< 0.0045	< 0.018		
MW-9	8/22/2002	10	< 0.280	< 0.0023	< 0.0023	< 0.0023	< 0.0023		< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.023		
MW-9	8/22/2002	15	< 0.290	< 0.0023	< 0.0023	< 0.0023	< 0.0023		< 0.0057	< 0.0057	< 0.0057	< 0.0057	< 0.023		
MW-9	8/22/2002	20	< 0.250	< 0.002	< 0.002	< 0.002	< 0.002		< 0.005	< 0.005	< 0.005	< 0.005	< 0.020		
MW-9	8/22/2002	25	< 0.280	< 0.0022	< 0.0022	< 0.0022	< 0.0022		< 0.0056	< 0.0056	< 0.0056	< 0.0056	< 0.022		
MW-9	8/22/2002	30	< 0.250	< 0.002	< 0.002	< 0.002	< 0.002		0.019	< 0.005	< 0.005	< 0.005	0.410		

NOTES:	ft bgs EPA mg/kg TPHg MtBE ETBE DIPE	- feet below ground surface - U.S. Environmental Protection Agency - milligrams per kilogram - total petroleum hydrocarbons quantified as gasoline - methyl tertiary butyl ether - ethyl tertiary butyl ether - di-isopropyl ether	TAME TBA TRPH < J	- tertiary amyl methyl ether - tertiary butyl alcohol - total recoverable petroleum hydrocarbons - not detected at or above the indicated value - denotes a value between the method detection limit and the detection limit for reporting purposes
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Table 2. Historical Groundwater Analyses and Gauging Results Chevron Environmental Management Company Service Station No. 9-0857 1790 North Long Beach Boulevard, Long Beach, California

		Top of	Depth	NAPL	GW	Depth				Ethyl-	Total	MTBE						
Well	Date	Casing	to GW	Thickness	Elevation	of Well	TPHg	Benzene	Toluene	Benzene	Xylenes	8020/8021	MTBE	ETBE	DIPE	TAME	TBA	
ID	Sampled	(feet)	(feet)	(feet)	(feet)	(feet)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	Comments
MW-1	11/25/1991	29.07	33.05	0.97	-3.98													
MW-1	5/29/1992	29.07																Well obstructed
MW-1	8/22/1992	29.07	33.45	2.12	-4.38													Survey data 9/23/92
MW-1	10/31/1992	29.07	33.53	1.66	-4.46													
MW-1	2/18/1993	29.07	32.85	1.54	-3.78													
MW-1	4/27/1993	29.07	33.10	0.90	-4.03													
MW-1	5/27/1993	29.07	32.15	1.30	-3.08													
MW-1	6/29/1993	29.07	31.72	0.95	-2.65													
MW-1	7/16/1993	29.07	31.68	0.79	-2.61													
MW-1	8/19/1993	29.07	31.37	0.56	-2.30													
MW-1	9/18/1993	29.07	31.34	0.53	-2.27													
MW-1	10/11/1993	29.07	31.34	0.51	-2.27													
MW-1	11/15/1993	29.07	31.25	0.43	-2.18													
MW-1	12/2/1993	29.07	31.07	0.30	-2.00													
MW-1	1/7/1994	29.07	31.20	0.40	-2.13													
MW-1	2/8/1994	29.07	31.11	0.37	-2.04													
MW-1	3/5/1994	29.07	30.92	0.32	-1.85													
MW-1	4/4/1994	29.07	30.89	0.31	-1.82													
MW-1	5/14/1994	29.07	30.95	0.40	-1.88													
MW-1	6/10/1994	29.07	30.90	0.35	-1.83													
MW-1	8/25/1994	29.07	31.00	0.47	-1.93													
MW-1	11/9/1994	29.07	30.93	0.55	-1.86													
MW-1	2/16/1995	29.07	30.66	0.56	-1.59													
MW-1	5/5/1995	29.07	30.33	0.32	-1.26													
MW-1	8/16/1995	29.07	29.95	0.24	-0.88													
MW-1	11/15/1995	29.07	29.82	0.17	-0.75													
MW-1	2/26/1996	29.07	29.93	0.22	-0.86													
MW-1	6/4/1996	29.37	29.93	0.78	-0.56													Resurveyed
MW-1	8/8/1996	29.37	31.66		-2.29													
MW-1	11/12/1996	29.37	30.19	0.20	-0.82													
MW-1	2/3/1997	29.37	29.06		0.31													
MW-1	5/20/1997	29.37	29.40		-0.03													
MW-1	8/12/1997	29.37	29.55	0.10	-0.18													
MW-1	11/22/1997	29.37	29.70	0.23	-0.33													
MW-1	1/27/1998	29.37	29.50	0.10	-0.13													
MW-1	4/27/1998	29.37	28.67	0.01	0.70			1900	14 000	5300	30,000	ND.						
MW-1	7/10/1998	29.37	28.40	0	0.97		96,000	1800	14,000			ND						Not Found
MW-1 MW-1	7/10/1998 1/21/1999	29.37 29.37																Not Found Not Found
MW-1 MW-1	4/29/1999	29.37																Not Found Not Found
MW-1	7/27/1999	29.37																Abandoned
IVI VV - 1	1/41/1777	47.31																Abandoned
MW-2	11/25/1991	28.99	32.66	0	-3.67		4100	530	11	470	720							
MW-2	5/29/1992	28.99	32.33	0	-3.34		1600	110	49	210	220							
MW-2	8/22/1992	28.99	32.40	0	-3.41		4000	520	450	420	870							Survey data 9/23/92
MW-2	10/31/1992	28.99	32.34	0	-3.35		7600	840	670	860	1400							
MW-2	2/18/1993	28.99	31.64	0	-2.65		1900	470	320	550	7800							
MW-2	4/27/1993	28.99	31.41	0	-2.42		2900	850	2.7	260	150							
MW-2	5/27/1993	28.99	31.23		-2.24													

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		Top of	Depth	NAPL	GW	Depth				Ethyl-	Total	MTBE						
Well	Date	Casing	to GW	Thickness	Elevation	of Well	TPHg	Benzene	Toluene	Benzene	Xylenes	8020/8021	MTBE	ETBE	DIPE	TAME	TBA	
ID	Sampled	(feet)	(feet)	(feet)	(feet)	(feet)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	Comments
MW-2	6/29/1993	28.99	31.12		-2.13													
MW-2	7/16/1993	28.99	31.13	0	-2.14		6100	350	330	760	1100							
MW-2	8/19/1993	28.99	31.02		-2.03													
MW-2	9/18/1993	28.99	30.98		-1.99													
MW-2	10/11/1993	28.99	31.02		-2.03													
MW-2	11/15/1993	28.99	31.02		-2.03													
MW-2	12/2/1993	28.99	30.86	0	-1.87		4000	250	180	640	770							
MW-2	1/7/1994	28.99	31.00		-2.01													
MW-2	2/8/1994	28.99	30.93	0	-1.94		3500	230	150	440	430							
MW-2	3/5/1994	28.99	30.78		-1.79													
MW-2	4/4/1994	28.99	30.72	0	-1.73		4600	320	290	600	760							
MW-2	5/14/1994	28.99	30.71		-1.72													
MW-2 MW-2	6/10/1994 8/25/1994	28.99 28.99	30.73	0	-1.74 -1.71		3000	140	53	230	210							
MW-2 MW-2	11/9/1994	28.99	30.62	0	-1./1		2000	110	48	110	150							
MW-2	2/16/1995	28.99	30.30	0	-1.31		2200	290	4.5	240	120							
MW-2	5/5/1995	28.99	29.71	0	-0.72		1100	79	24	59	120							
MW-2	8/16/1995	28.99	29.52	0	-0.53		ND	55	ND	9.0	5.0							
MW-2	11/15/1995	28.99	29.31	0	-0.32		1400	60	3.0	30	60							
MW-2	2/26/1996	28.99	29.35	0	-0.36		1000	74	2.5	34	71							
MW-2	6/4/1996	28.95	29.16	0	-0.21		560	69	ND	23	95							Resurveyed
MW-2	8/8/1996	28.95	32.00	0	-3.05		110	5.0	2.2	1.7	27	160						
MW-2	11/12/1996	28.95	29.57	0	-0.62		750	54	ND	50	120	410						
MW-2	2/3/1997	28.95	29.05	0	-0.10		ND	0.7	ND	ND	ND	23						
MW-2	5/20/1997	28.95	29.05	0	-0.10		210	15	ND	11	20	95						
MW-2	8/12/1997	28.95	29.05	0	-0.10		ND	ND	ND	ND	ND	ND						
MW-2	11/22/1997	28.95	29.05	0	-0.10		2400	130	160	240	450	300						
MW-2	1/27/1998	28.95	29.00	0	-0.05		140	1.4	ND	1.0	1.8	210						
MW-2	4/27/1998	28.95	28.20	0	0.75		120	9.0	9.6	1.8	11	130						
MW-2	7/10/1998	28.95	28.80	0	0.15		160	14	33	5.0	22	98	120					
MW-2	1/21/1999 4/29/1999	28.95	30.16	0	-1.21		ND<500	16.3 ND<3.0	10.3 3.6	7.98 ND<3.0	16.9	233 180	210 170					
MW-2 MW-2	7/27/1999	28.95 28.95	30.93 30.94	0	-1.98 -1.99		1330 ND<500	ND<0.3	ND<0.3	ND<0.3	ND<6.0	175	149					
MW-2	11/3/1999	28.95	30.65	0	-1.70		230	0.4	1.0	ND<0.3	ND<0.6	230	123					
MW-2	1/10/2000	28.95	30.80	0	-1.85		1010	1.4	ND<0.3	0.8	2.0	94	98					
MW-2	4/5/2000	28.95	30.53	0	-1.58		ND<1000	2.0	4.0	2.0	6.0	55	42					
MW-2	7/12/2000	28.95	30.52	0	-1.57		92	4.0	1.0	ND<0.6	ND<1.2	92	48					
MW-2	11/1/2000	28.80	30.26	0	-1.46		164 J	6.2	5.9	ND<5	9.9		59					
MW-2	1/3/2001	28.80	30.26	0	-1.46		190	4.4 J	ND<5.0	3.6 J	3.0 J		35	ND<5	ND<5	ND<5	87	
MW-2	4/24/2001	28.80	29.70	0	-0.90	46.77	104	ND<5	ND<5	ND<5	ND<5		23	ND<1	ND<1	ND<1	24	
MW-2	7/10/2001	28.80	29.75	0	-0.95	46.60	116	ND<5	ND<5	ND<5	ND<5		59	ND<1	ND<1	ND<1	26	
MW-2	10/17/2001	28.80	29.80	0	-1.00	46.60	137	3.0	ND<5	ND<5	ND<5		27	ND<1	ND<1	ND<1	32	
MW-2	1/2/2002	28.80	29.89	0	-1.09	46.55	ND<100	ND<1	ND<5	ND<5	ND<5		26	ND<1	ND<1	ND<1	6.8J	
MW-2	4/11/2002	28.80	29.92	0	-1.12	46.50	ND<100	ND<1	ND<5	ND<5	ND<5		19	ND<1	ND<1	ND<1	ND<10	
MW-2	7/2/2002	30.88	30.09	0	0.79	46.70	64	ND<1	ND<1	3.4	2.8		37	ND<2	ND<2	ND<2	45	*Resurveyed
MW-2	10/3/2002	30.88	30.30	0	0.58	46.95	ND<50	ND<1	ND<1	ND<1	ND<1		21	ND<2	ND<2	ND<2	29	
MW-2	1/21/2003	30.88	30.03	0	0.85	46.69	ND<50	ND<1	ND<1	ND<1	ND<1		22	ND<2	ND<2	ND<2	30	
MW-2	4/29/2003	30.88	29.62	0	1.26	46.70	ND<50	ND<1	ND<1	ND<1	ND<1		18	ND<2	ND<2	ND<2	27	
MW-2	7/24/2003	30.88	29.37	0	1.51	46.67	ND<50	ND<1	ND<1	ND<1	ND<1		22	ND<2	ND<2	ND<2	16 J	

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		Top of	Depth	NAPL	GW	Depth				Ethyl-	Total	MTBE						
Well	Date	Casing	to GW	Thickness	Elevation	of Well	TPHg	Benzene	Toluene	Benzene	Xylenes	8020/8021	MTBE	ETBE	DIPE	TAME	TBA	
ID	Sampled	(feet)	(feet)	(feet)	(feet)	(feet)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	Comments
ш	Sampled	(leet)	(leet)	(leet)	(leet)	(leet)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	Comments
MW-2	10/17/2003	30.88	29.23	0	1.65	46.65	ND<50	ND<1	ND<1	ND<1	ND<1		18	ND<2	ND<2	ND<2	ND<10	
MW-2	1/30/2004	30.88	29.16	0	1.72	46.68	50 J	ND<1	ND<1	ND<1	ND<1		11	ND<2	ND<2	ND<2	14 J	
MW-2	4/19/2004	30.88	29.10	0	1.78	46.67	ND<50	ND<1	ND<1	ND<1	ND<1		16	ND<2	ND<2	ND<2	23 J	
MW-2	7/8/2004	30.88	29.07	0	1.81	46.69	ND<50	ND<1	ND<1	ND<1	ND<1		11	ND<2	ND<2	ND<2	20 J	
MW-2	11/8/2004	30.88	29.06	0	1.82	46.75	ND<50	ND<1	ND<1	ND<1	ND<1		9.8	ND<2	ND<2	ND<2	ND<10	
MW-2	1/21/2005	30.88	28.51	0	2.37	46.71	ND<50	ND<1	ND<1	ND<1	ND<1		13	ND<2	ND<2	ND<2	11 J	
MW-2	4/7/2005	30.88	27.61	0	3.27	46.58	ND<50	ND<1	ND<1	ND<1	ND<1		39	ND<2	ND<2	ND<2	37	
MW-2	8/17/2005	30.88	27.00	0	3.88	46.61	ND<50	ND<1	ND<1	ND<1	ND<1		8.0	ND<2	ND<2	ND<2	17 J	
MW-3	11/25/1991	29.91	33.37	0	-3.46		ND	ND	ND	ND	ND							
MW-3	5/29/1992	29.91	33.00	0	-3.09		ND	ND	ND	ND	ND							
MW-3	8/22/1992	29.91	32.97	0	-3.06		ND	1.4	1.1	0.9	0.9							
MW-3	10/31/1992	29.91	32.99	0	-3.08		ND	0.4	ND	ND	ND							
MW-3	2/18/1993	29.91	32.49	0	-2.58		ND	ND	ND	ND	ND							
MW-3	4/27/1993	29.91	32.15	0	-2.24		ND	ND	ND	ND	ND							
MW-3	5/27/1993	29.91	31.98		-2.07													
MW-3	6/29/1993	29.91	31.83		-1.92													
MW-3	7/16/1993	29.91	31.86	0	-1.95		ND	ND	ND	ND	ND							
MW-3	8/19/1993	29.91	22.74		7.17													
MW-3	9/18/1993	29.91	37.71		-7.80													
MW-3	10/11/1993	29.91	31.73		-1.82													
MW-3	11/15/1993	29.91	31.71		-1.80													
MW-3	12/2/1993	29.91	31.61	0	-1.70		ND	ND	ND	ND	ND							
MW-3	1/7/1994	29.91	31.69		-1.78													
MW-3	2/8/1994	29.91	31.62	0	-1.71		ND	ND	ND	ND	ND							
MW-3	3/5/1994	29.91	31.52		-1.61													
MW-3	4/4/1994	29.91	31.44	0	-1.53		ND	ND	ND	ND	ND							
MW-3	5/14/1994	29.91																
MW-3	6/10/1994	29.91	31.41		-1.50													
MW-3	8/25/1994	29.91	31.37	0	-1.46		ND	0.71	1.0	2.2	3.2							
MW-3	11/9/1994	29.91	31.38	0	-1.47		ND	ND	ND	ND	ND							
MW-3	2/16/1995	29.91	31.00	0	-1.09		ND	ND	ND	ND	ND							
MW-3	5/5/1995	29.91	30.43	0	-0.52		ND	1.2	2.4	ND	1.8							
MW-3	8/16/1995	29.91	30.26	0	-0.35		ND	ND	ND	ND	ND							
MW-3	11/15/1995	29.91	30.23	0	-0.32		ND	ND	ND	ND	ND							
MW-3	2/26/1996	29.91	30.22	0	-0.31		ND	ND	ND	ND	ND							
MW-3	6/4/1996	29.91	30.08	0	-0.17		ND	ND	ND	ND	ND							
MW-3	8/8/1996	29.91	30.20	0	-0.29		ND	ND	ND	ND	ND	26						
MW-3	11/12/1996	29.91	30.45	0	-0.54		ND	ND	ND	ND	ND	18						
MW-3	2/3/1997	29.91	29.95	0	-0.04		ND	ND	ND	ND	ND	ND						
MW-3	5/20/1997	29.91	29.92	0	-0.01		ND	ND	ND	ND	ND	ND						
MW-3	8/12/1997	29.91	29.95	0	-0.04		ND	ND	ND	ND	ND	ND						
MW-3	11/22/1997	29.91	29.97	0	-0.06		ND	ND	ND	ND	ND	ND						
MW-3	1/27/1998	29.91	29.93	0	-0.02		ND	ND	ND	ND	ND	ND						
MW-3	4/27/1998	29.91	29.16	0	0.75		150	17	20	4.0	26	16						
MW-3	7/10/1998	29.91	28.85	0	1.06		ND	ND	ND	ND	ND	ND						
MW-3	1/21/1999	29.91																
MW-3	4/29/1999	29.91																No longer monitored

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		Top of	Depth	NAPL	GW	Depth				Ethyl-	Total	MTBE						
Well	Date	Casing	to GW	Thickness	Elevation	of Well	TPHg	Benzene	Toluene	Benzene	Xylenes	8020/8021	MTBE	ETBE	DIPE	TAME	TBA	
ID	Sampled	(feet)	(feet)	(feet)	(feet)	(feet)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	Comments
MW-4	11/25/1991	28.77	32.41	0	-3.64		1,300	280	4.5	35	63							
MW-4	5/29/1992	28.77	32.00	0	-3.23		3,000	1,100	83	140	260							
MW-4	8/22/1992	28.77	31.92	0	-3.15		6,000	2,500	230	480	670							Survey data 9/23/92
MW-4	10/31/1992	28.77	31.95	0	-3.18		9,000	3,500	310	780	1100							
MW-4	2/18/1993	28.77	31.44	0	-2.67		1,400	1,200	7.5	290	62							
MW-4	4/27/1993	28.77	31.11	0	-2.34		4,000	1,000	170	280	220							
MW-4	5/27/1993	28.77	30.90		-2.13													
MW-4	6/29/1993	28.77	30.71		-1.94													
MW-4	7/16/1993	28.77	30.72	0	-1.95		2100	590	28	180	130							
MW-4	8/19/1993	28.77	29.72		-0.95													
MW-4	9/18/1993	28.77	30.67		-1.90													
MW-4	10/11/1993	28.77	30.70		-1.93													
MW-4	11/15/1993	28.77	30.68		-1.91													
MW-4	12/2/1993	28.77	30.61	0	-1.84		760	180	1.3	76	22							
MW-4	1/7/1994	28.77	30.66		-1.89													
MW-4	2/8/1994	28.77	30.60	0	-1.83		2100	560	9.5	220	120							
MW-4	3/5/1994	28.77	30.50		-1.73													
MW-4	4/4/1994	28.77	30.43	0	-1.66		1600	470	4.9	170	67							
MW-4	5/14/1994	28.77	30.41		-1.64													
MW-4	6/10/1994	28.77	30.40		-1.63													
MW-4	8/25/1994	28.77	30.32	0	-1.55		690	150	1.6	59	9.3							
MW-4	11/9/1994	28.77	30.11	0	-1.34		9200	2,200	75	790	980							
MW-4	2/16/1995	28.77	29.87	0	-1.10		ND	0.73	0.43	ND	0.88							
MW-4	5/5/1995	28.77	29.38	0	-0.61		240	55	5.2	18	20							
MW-4	8/16/1995	28.77	29.22	0	-0.45		ND	37	ND	8.0	7.0							
MW-4	11/15/1995	28.77	29.08	0	-0.31		ND	ND	ND	ND	ND							
MW-4	2/26/1996	28.77	29.08	0	-0.31		ND	1.7	ND	ND	ND							
MW-4	6/4/1996	28.69	28.97	0	-0.28		ND	ND	ND	ND	ND							Resurveyed
MW-4	8/8/1996	28.69	29.08	0	-0.39		ND	ND	ND	ND	ND	ND						
MW-4	11/12/1996	28.69	29.30	0	-0.61		430	1.4	0.5	5.2	5.4	15						
MW-4	2/3/1997	28.69	28.80	0	-0.11		ND	0.37	ND	ND	0.83	ND						
MW-4	5/20/1997	28.69	28.80	0	-0.11		ND	4.3	ND	1.9	0.98	ND						
MW-4	8/12/1997	28.69	28.78	0	-0.09		78	3.7	ND	1.3	0.76	ND						
MW-4	11/22/1997	28.69	28.84	0	-0.15		ND	0.99	ND	1.2	ND	ND						
MW-4	1/27/1998	28.69	28.70	0	-0.01		910	68	40	110	160	ND						
MW-4	4/27/1998	28.69	27.95	0	0.74		1100	270	17	21	200	86						
MW-4	7/10/1998	28.69	27.68	0	1.01		660	110	50	20	73	ND						
MW-4	1/21/1999	28.69	30.05	0	-1.36		ND<5000	247	ND<3.0	ND<3.0	507	ND<100						
MW-4	4/29/1999	28.69	30.87	0	-2.18		13,540	1120	92	31	600	ND<1000						
MW-4	7/27/1999	28.69	30.75	0	-2.06		10,300	920	3.2	92	95	632	441					
MW-4	11/3/1999	28.69	30.48	0	-1.79		2050	635	3.0	1.4	42	453	356					
MW-4	1/10/2000	28.69	30.53	0	-1.84		7280	1,020	13	10	37	525	338					
MW-4	4/5/2000	28.69	30.31	0	-1.62		1790	68	12	ND<6.0	28	1790	1,070					
MW-4	7/12/2000	28.69	30.72	0	-2.03		987	462	2.0	2.0	ND<3.0	987	1,080					
MW-4	11/1/2000	28.54	30.09	0	-1.55		3160	680	6.3	8.6	10		2,370					
MW-4	1/3/2001	28.54	30.01	0	-1.47		2000	490	ND<25	6.4 J	ND<25		850	ND<25	ND<25	ND<25	1400	
MW-4	4/24/2001	28.54	29.50	0	-0.96	50.60	309	ND<5	ND<5	ND<5	ND<5		183	ND<1	ND<1	ND<1	418	
MW-4	7/10/2001	28.54	29.54	0	-1.00	50.45	1140	334	ND<5	ND<5	ND<5		454	ND<1	ND<1	11	937	
MW-4	10/17/2001	28.54	29.57	0	-1.03	50.50	1,020	174	ND<5	ND<5	ND<5		221	ND<1	ND<1	ND<1	292	

Table 2. Historical Groundwater Analyses and Gauging Results Chevron Environmental Management Company Service Station No. 9-0857 1790 North Long Beach Boulevard, Long Beach, California

West December Control Contro			Top of	Depth	NAPL	GW	Depth				Ethyl-	Total	MTBE						
MW-1 102002 584-1 596-1 0 -1.11 5155 596 88 ND-5 ND-5 ND-5 ND-1 N	Well	Date	-	-	Thickness	Elevation	-	TPHg	Benzene	Toluene	Benzene	Xylenes	8020/8021	MTBE	ETBE	DIPE	TAME	TBA	
MW-4 471/2002 28.54 29.88 0 -1.14 50.45 487 48 ND-5 ND-5 ND-5 -240 ND-10	ID	Sampled	(feet)	(feet)	(feet)	(feet)	(feet)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	Comments
MW-4 471/2002 28.54 29.88 0 -1.14 50.45 487 48 ND-5 ND-5 ND-5 -240 ND-10	MW/ 4	1/2/2002	28.54	20.64	0	1.10	51 55	506	85	ND-5	ND-5	ND-5		150	ND-1	ND-1	ND-1	517	
MW-4 722002 3062 29.78 0 0.84 59.45 3.06 59 ND-5 ND-5 ND-5 ND-5 ND-5 ND-6 N																			
MW-4 103/2002 3062 29.95 0 0.66 50.99 230 16 ND-1 ND-1 ND-1 1.21 100 ND-2 ND-2 ND-2 ND-0 ND-0 ND-1 ND																			
MW-4 121/2003 3062 29.78 0 0.87 50.64 92.1 6.9 NDc4 NDc4																			,
MW-4 479/2003 30.62 29.18 0 1.24 50.70 ND-50 ND-1 ND-1 ND-1 ND-1 ND-1 ND-2 ND-2 ND-2 ND-2 610																			
MW-4 17/24/2003 30.62 29.19 0 1.63 50.65 ND-50 ND-1 ND-1 ND-1 ND-1 ND-1 ND-2 ND-2 ND-2 ND-2 S80																			
MW-4 1017/2003 30.62 28.99 0 1.63 50.65 ND-50 ND-1 ND-1 ND-1 ND-1 42 ND-2 ND-2 ND-2 ND-2 750																			
MW-4 1/30/2004 30.62 28.88 0 1.74 50.68 61.1 32.17 ND-1 ND-1 ND-1 ND-1 ND-1 ND-1 ND-1 ND-2 ND-2 ND-2 ND-2 S0 ND-2 ND-																			
MW-4 419/2004 30.62 28.88 0 1.74 50.61 ND-50 L1J ND-1 ND-																			
MW-4 78/2004 30.62 28.79 0 1.83 50.60 ND-50 NDc1 NDc1 NDc1 NDc1 NDc2 NDc2 NDc2 S00 MW-4 1/21/2005 30.62 28.28 0 2.34 50.59 ND-50 NDc1 NDc1 NDc1 NDc1 NDc1 NDc2 NDc2 NDc2 S4 MW-4 1/21/2005 30.62 28.28 0 2.34 50.59 ND-50 NDc1 NDc1 NDc1 NDc1 NDc1 NDc2 NDc2 NDc2 S4 MW-4 1/21/2005 30.62 27.85 0 3.17 50.54 NDc50 NDc1 NDc1 NDc1 NDc1 NDc1 NDc2 NDc2 NDc2 NDc2 S4 MW-4 1/21/2005 30.62 27.85 0 3.82 50.53 ND-50 NDc1 NDc1 NDc1 NDc1 NDc1 NDc2 NDc2 NDc2 NDc2 MDc2																			
MW-4					0														
MW4 1/21/2005 30.62 28.88 0 2.34 50.59 ND ND ND ND IND ND<2 ND<2 ND<2 54					0									25					
MW-5 11/25(1991 28.44 32.07 0 -3.63 -2.560 460 6.9 180 170 3.6 J ND-2 ND-2 ND-2 44 MW-5 11/25(1991 28.44 31.66 0 -3.22 -3.30 28 0.7 5.2 12 -	MW-4	1/21/2005	30.62		0	2.34	50.59	ND<50	ND<1	ND<1	ND<1	ND<1		18	ND<2	ND<2	ND<2	54	
MW-5 5/29/1992 28.44 32.07 0 -3.63 - 2500 460 6.9 180 170	MW-4	4/7/2005	30.62	27.45	0	3.17	50.54	ND<50	ND<1	ND<1	ND<1	ND<1		15	ND<2	ND<2	ND<2	36	
MW-5 5/29/1992 28.44 31.66 0 -3.22 -3.30 28 0.7 5.2 12	MW-4	8/17/2005	30.62	26.80	0	3.82	50.53	ND<50	ND<1	ND<1	ND<1	ND<1		3.6 J	ND<2	ND<2	ND<2	44	
MW-5 5/29/1992 28.44 31.66 0 -3.22 -3.30 28 0.7 5.2 12																			
MW.5 8/22/1992 28.44 31.71 0 -3.27 - 2100 650 ND 230 96																			
MW-5 10/31/1992 28.44 31.61 0 -3.17																			
MW-5 4271993 28.44 31.06 0 -2.62																			
MW-5 42711993 28.44 30.76 0 -2.23 10.000 800 800 1100 2100																			
MW-5 5(27)1993 28.44 30.62																			
MW-5 6/29/1993 28.44 30.49 - 2.05 -																			
MW-5 7/16/1993 28.44 30.38 1.94																			
MW-5 8/19/1993 28.44 30.38 -1.94																			
MW-5 9/18/1993																			
MW-5 10/11/1993 28.44 30.361.92																			
MW-5 11/15/1993 28.44 30.33 -1.89 </td <td></td>																			
MW-5 12/2/1993 28.44 30.24 0 -1.80 1700 590 4.1 230 84																			
MW-5 17/1994 28.44 30.331.89																			
MW-5 2/8/1994 28.44 30.26 0 -1.82 8400 3,000 11 1000 500 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>																			
MW-5 3/5/1994 28.44 30.08 0 -1.64 4500 1,500 5.8 530 460																			
MW-5 4/4/1994 28.44 30.08 0 -1.64 4500 1,500 5.8 530 460 <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>																			
MW-5 5/14/1994 28.44 30.08 -1.64 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>4500</td> <td></td>								4500											
MW-5 6/10/1994 28.44 30.06 -1.62 <td></td>																			
MW-5 8/25/1994 28.44 30.03 0 -1.59 2000 260 1.7 180 120																			
MW-5 11/9/1994 28.44 29.99 0 -1.55 11,000 1,300 9.4 1100 600																			
MW-5 2/16/1995 28.44 29.57 0 -1.13 960 300 ND 94 46 </td <td></td>																			
MW-5 5/5/1995 28.44 29.03 0 -0.59 6000 1,600 11 530 260																			
MW-5 8/16/1995 28.44 28.86 0 -0.42 2570 1,100 ND 70 40					0			6000	1,600		530	260							
MW-5 11/15/1995 28.44 28.73 0 -0.29 1150 290 1.0 3.0 4.0 <th< td=""><td></td><td></td><td>28.44</td><td>28.86</td><td>0</td><td></td><td></td><td>2570</td><td>1,100</td><td>ND</td><td>70</td><td>40</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>			28.44	28.86	0			2570	1,100	ND	70	40							
MW-5 2/26/1996 28.44 28.73 0 -0.29 370 94 ND 2.6 2.5 <	MW-5				0						3.0	4.0							
MW-5 6/4/1996 28.32 28.58 0 -0.26 62 9.1 ND 1.1 1.5 Resurveyed MW-5 8/8/1996 28.32 29.63 0 -1.31 ND 9.8 ND 0.36 2.1 170																			
MW-5 8/8/1996 28.32 29.63 0 -1.31 ND 9.8 ND 0.36 2.1 170					0			62	9.1		1.1								Resurveyed
MW-5 2/3/1997 28.32 28.85 0 -0.53 1000 43 ND 40 190 ND MW-5 5/20/1997 28.32 28.45 0 -0.13 370 91 ND 40 5.7 21		8/8/1996	28.32	29.63	0	-1.31		ND	9.8	ND	0.36	2.1	170						
MW-5 5/20/1997 28.32 28.45 0 -0.13 370 91 ND 40 5.7 21	MW-5	11/12/1996	28.32	28.95	0	-0.63		ND	4.8	ND	0.46	0.92	91						
	MW-5	2/3/1997	28.32	28.85	0	-0.53		1000	43	ND	40	190	ND						
MW-5 8/12/1997 28.32 28.44 0 -0.12 1600 150 ND 260 41 ND	MW-5	5/20/1997	28.32	28.45	0	-0.13		370	91	ND	40	5.7	21						
	MW-5	8/12/1997	28.32	28.44	0	-0.12		1600	150	ND	260	41	ND						

Table 2. Historical Groundwater Analyses and Gauging Results Chevron Environmental Management Company Service Station No. 9-0857 1790 North Long Beach Boulevard, Long Beach, California

No. Part P			Top of	Depth	NAPL	GW	Depth				Ethyl-	Total	MTBE						
	Well	Date	-	-			-	TPHø	Benzene	Toluene				MTRE	ETRE	DIPE	TAME	TBA	
Mary								U				•							Comments
MW-5 1/27/1978 28.32 28.40 0		•					` ′		` 0 /										
MW-5																			
MW-5																			
Mary																			
MW-5 4/29/1999																			
MW-5																			
MW-5																			
MW-5 10/10/200 28.32 30.18 0 1.18 65.09 82.5 22 24 53 50.0 36.0																			
MWS 45/2000 28.32 29.88 0 1.51 2500 42.5 5.0 7.0 5.0 55.8 396 MWS MWS 11/1/2000 28.17 29.76 0 0 1.59 280 342 4.81 14 7.8 11.50 MBS 11.20 MBS																			
NW-5 17/12/2000 28.72 29.88 0																			
NW-5 11/1/2000 28.17 29.56 0 -1.59 2280 3.09 1.99 2.00 3.00 1.90 1.50																			
NWS 1/2/201 28.17 29.65 0																			
NW-5 42(200) 28,17 29,00 0 -9.83 53,41 24/90 297 ND-5 42 ND-5 250 ND-6 ND-6 ND-6 176																			
NW-5 71/02/01 28.17 29.13 0 -0.96 53.35 2,440 51.7 ND-5 120 ND-5 - 478 ND-1 ND-1 ND-1 ND-1 ND-1 121																			
NW-5 10/17/2001 28.17 29.25 0 -1.08 53.38 3.569 598 7.3 34 ND-5 - 306 ND-1 ND-1 ND-10 ND-10																			
MW-5 1/2/2002 28.17 29.30 0 -1.15 53.35 1,680 20.3 ND-50 ND-50 ND-50 191 ND-10 ND-1																			
MW-5 41/12002 28.17 29.32 0 -1.15 53.30 1.280 96 ND-5 ND-5 ND-5 -1.15 ND-1 ND																			
MW-5 7/2/2002 30.25 29.43 0 0.82 53.85 1,700 150 ND-2/5 6.2 ND-2/5 300 ND-5 ND-5 ND-5 ND-6 ND-2 ND																			
MW-5 10/3/2002 30.25 29.88 0 0.67 53.63 1,200 67 ND-1 2.81 1.4J 220 ND-2 ND-2 1,200 - MW-5 4,29/2003 30.25 29.03 0 1.22 53.45 640 35 ND-5 ND-5 1.40 ND-10 ND-10 ND-10 890 - MW-5 71/2/2003 30.25 28.75 0 1.50 53.35 400 11 ND-1 10 ND-2 ND-2 610 MW-5 17/2003 30.25 28.51 0 1.76 53.53 300 8.7 ND-1 ND-1 ND-1 ND-2 ND-2 ND-2 700 MW-5 1/8/2004 30.25 28.51 0 1.67 53.53 300 18 ND-1 ND-1 ND-1 ND-2 ND-2 ND-2 20 MW-5 1/8/18/2004 30.25																			
MW-5 1/21/2003 30.25 29.42 0 0.83 53.37 500 12.J ND ND ND ND 130 ND<20 <																			*Resurveyed
MW-5 4/29/2003 30.25 29.03 0 1.22 53.45 640 35 ND-5 ND-5						0.67				ND<1									
MW-5 7/24/2003 30.25 28.75 0 1.50 53.45 470 26 ND<1 1.3J ND<1 101/7/2003 30.25 28.69 0 1.56 53.53 400 11 ND<1 ND<1 ND<1 70 ND<2 ND<2 ND<2 70 MW-5 1/30/2004 30.25 28.51 0 1.74 53.53 320 8.7 ND<1	MW-5		30.25	29.42		0.83		500		ND<10				130	ND<20	ND<20		1,000	
MW-5 10/17/2003 30.25 28.69 0 1.56 53.53 400 11 ND <i< th=""> ND<i< th=""> ND<i< th=""> ND<2 ND<2 ND<2 700 </i<></i<></i<>	MW-5	4/29/2003	30.25	29.03	0	1.22	53.45	640	35	ND<5	ND<5	ND<5		140	ND<10	ND<10	ND<10	890	
MW-5 1/30/2004 30.25 28.51 0 1.74 53.53 320 8.7 NDc1 NDc1 NDc1 - 26 NDc2 NDc2 NDc2 270	MW-5	7/24/2003	30.25	28.75	0	1.50	53.45	470	26	ND<1	1.3 J	ND<1		110	ND<2		ND<2	610	
MW-5 4/19/2004 30.25 28.58 0 1.67 53.54 300 18 ND<1 1.0 J ND<1 37 ND<2 ND<2 ND<2 320 MW-5 71/8/2004 30.25 28.53 0 1.72 53.55 430 19 ND<1	MW-5	10/17/2003	30.25	28.69	0	1.56	53.53	400	11	ND<1	ND<1	ND<1		70	ND<2	ND<2	ND<2	700	
MW-5 7/8/2004 30.25 28.53 0 1.72 53.55 430 19 ND<1 ND<1 ND<1 32 ND<2 ND<2 ND<2 240 MW-5 11/8/2004 30.25 28.46 0 1.79 53.55 290 3.4 J ND<1	MW-5	1/30/2004	30.25	28.51	0	1.74	53.53	320	8.7	ND<1	ND<1	ND<1		26	ND<2	ND<2	ND<2	720	
MW-5 11/8/2004 30.25 28.46 0 1.79 53.55 290 3.4 J ND<1 ND<1 ND<1 ND<1 ND<2 ND<2 ND<2 ND<2 120 MW-5 1/21/2005 30.25 27.90 0 2.35 53.44 ND<50	MW-5	4/19/2004	30.25	28.58	0	1.67	53.54	300	18	ND<1	1.0 J	ND<1		37	ND<2	ND<2	ND<2	320	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	MW-5	7/8/2004	30.25	28.53	0	1.72	53.55	430	19	ND<1	ND<1	ND<1		32	ND<2	ND<2	ND<2	240	
MW-5 4/7/2005 30.25 27.05 0 3.20 53.39 200 13 ND<1 ND<1 20 ND<2 ND<2 ND<2 33 MW-6 8/17/2005 30.25 26.44 0 3.81 53.38 820 120 2.01 8.1 ND<1	MW-5	11/8/2004	30.25	28.46	0	1.79	53.55	290	3.4 J	ND<1	ND<1	ND<1		17	ND<2	ND<2	ND<2	120	
MW-5 8/17/2005 30.25 26.44 0 3.81 53.38 820 120 2.0 J 8.1 ND<1 27 ND<2 ND<2 32 MW-6 7/27/1999 29.58 31.74 0 -2.16 75,600 1390 1780 970 3320 577 356	MW-5	1/21/2005	30.25	27.90	0	2.35	53.44	ND<50	ND<1	ND<1	ND<1	ND<1		3.6 J	ND<2	ND<2	ND<2	12 J	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	MW-5	4/7/2005	30.25	27.05	0	3.20	53.39	200	13	ND<1	ND<1	ND<1		20	ND<2	ND<2	ND<2	33	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	MW-5	8/17/2005	30.25	26.44	0	3.81	53.38	820	120	2.0 J	8.1	ND<1		27	ND<2	ND<2	ND<2	32	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	1007.6	5/05/100°	20.50	21.74	0	2.16		== coc	1200	4500	0.50	2220		250					
MW-6 1/10/2000 29.58 31.59 0 -2.01 71,800 1300 2000 1800 3650 8000 6510 23,800 868 965 947 2120 1840 1200 <																			
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$																			
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$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$,											
MW-6 4/24/2001 29.58 30.55 0 -0.97 39.10 15,100 300 195 587 1,300 NA 316 ND<1 ND<1 ND<1 434 MW-6 7/10/2001 29.58 30.55 0 -0.97 39.05 13,400 852 597 2,400 3,560 NA 1,120 ND<1																			
MW-6 7/10/2001 29.58 30.55 0 -0.97 39.05 13,400 852 597 2,400 3,560 NA 1,120 ND<1 ND<1 ND<1 583 MW-6 10/17/2001 29.58 30.57 0 -0.99 39.05 27,000 774 429 J 2,170 4,890 1,290 ND<250																			
MW-6 $10/17/2001$ 29.58 30.57 0 -0.99 39.05 $27,000$ 774 429 J $2,170$ $4,890$ $$ $1,290$ $ND<250$																			
MW-6 1/2/2002 29.58 30.68 0 -1.10 39.00 4,200 235 110 725 1,380 266 ND<10 ND<10 ND<10 98J MW-6 4/11/2002 29.58 30.70 0 -1.12 38.95 13,000 419 69 1,230 2,250 501 ND<1																			
MW-6 4/11/2002 29.58 30.70 0 -1.12 38.95 13,000 419 69 1,230 2,250 501 ND<1 ND<1 ND<1 963 MW-6 7/2/2002 31.66 30.82 0 0.84 39.20 3,700 210 16 620 850 300 ND<20 ND<20 ND<20 900 Odor/*Resurveyed MW-6 10/3/2002 31.66 30.91 0 0.75 39.27 7,300 330 ND<20 1,000 320 ND<40																			
MW-6 7/2/2002 31.66 30.82 0 0.84 39.20 3,700 210 16 620 850 300 ND<20 ND<20 900 Odor/*Resurveyed MW-6 10/3/2002 31.66 30.91 0 0.75 39.27 7,300 330 ND<20																			
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$																			
MW-6 1/21/2003 31.66 30.73 0 0.93 39.16 4,900 280 ND<20 760 780 200 ND<40 ND<40 1,100 Odor MW-6 4/29/2003 31.66 30.42 0 1.24 39.19 5,600 240 9.8 J 960 1,000 220 ND<10 ND<10 ND<10 1,400																			
MW-6 4/29/2003 31.66 30.42 0 1.24 39.19 5,600 240 9.8 J 960 1,000 220 ND<10 ND<10 ND<10 1,400																			
																			Odor
MW-6 7/24/2003 31.66 30.17 0 1.49 39.14 2,900 120 ND<10 350 310 120 ND<20 ND<20 800																			
	MW-6	7/24/2003	31.66	30.17	0	1.49	39.14	2,900	120	ND<10	350	310		120	ND<20	ND<20	ND<20	800	

Table 2. Historical Groundwater Analyses and Gauging Results Chevron Environmental Management Company Service Station No. 9-0857 1790 North Long Beach Boulevard, Long Beach, California

		Top of	Depth	NAPL	GW	Depth				Ethyl-	Total	MTBE						
Well	Date	Casing	to GW	Thickness	Elevation	of Well	TPHg	Benzene	Toluene	Benzene	Xylenes	8020/8021	MTBE	ETBE	DIPE	TAME	TBA	
ID	Sampled	(feet)	(feet)	(feet)	(feet)	(feet)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	Comments
												(ug/2)		_				Comments
MW-6	10/17/2003	31.66	30.08	0	1.58	39.10	4,000	210	3.0J	560	470		260	ND<4	ND<4	ND<4	1,400	
MW-6	1/30/2004	31.66	29.93	0	1.73	39.15	2,200	120	ND<4	310	240		110	ND<8	ND<8	ND<8	820	
MW-6	4/19/2004	31.66	29.96	0	1.70	39.13	1,800	120	ND<5	290	240		120	ND<10	ND<10	ND<10	840	
MW-6	7/8/2004	31.66	29.98	0	1.68	39.16	3,100	130	ND<4	330	290		96	ND<8	ND<8	ND<8	840	
MW-6	11/8/2004	31.66	29.85	0	1.81	39.15	2,400	110	1.4 J	310	150		81	ND<8	ND<8	ND<8	110	
MW-6	1/21/2005	31.66	29.31	0	2.35	39.13	1,900	60	ND<1	180	94		58	ND<2	ND<2	ND<2	780	
MW-6	4/7/2005	31.66	28.48	0	3.18	39.04	1,400	49	ND<2	140	63		22	ND<4	ND<4	ND<4	260	
MW-6	8/17/2005	31.66	27.87	0	3.79	39.00	1,600	48	ND<2	190	92		25	ND<4	ND<4	ND<4	160	
MW-7	7/27/1999	30.07	32.18	0	-2.11		9130	20	8.0	21	33	131	116					
MW-7	11/3/1999	30.07	31.89	0	-1.82		225	1.1	1.6	ND<0.3	ND<0.6	225	91					
MW-7	1/10/2000	30.07	32.02	0	-1.95		1030	13	1.5	15	33	112	66					
MW-7	4/5/2000	30.07	31.76	0	-1.69		1000	30	14	33	100	55	36					
MW-7	7/12/2000	30.07	31.69	0	-1.62		61	11	ND<0.6	11	12	61	59					
MW-7	11/1/2000	30.07	31.59	0	-1.52		1140	29	8.6	70	152		77					
MW-7	1/3/2001	30.07	31.47	0	-1.40		580	17	ND<5.0	40	130		49	ND<5	ND<5	ND<5	19J	
MW-7	4/24/2001	30.07	30.98	0	-0.91	39.08	261	6.2	ND<5	6.2	25		31	ND<1	ND<1	ND<1	ND<10	
MW-7	7/10/2001	30.07	31.00	0	-0.93	39.10	287	9,3	ND<5	ND<5	102		71	ND<1	ND<1	ND<1	ND<10	
MW-7	10/17/2001	30.07	30.95	0	-0.88	39.10	1,310	35	5.2	128	485		80	ND<1	ND<1	ND<1	88	
MW-7	1/2/2002	30.07	31.13	0	-1.06	40.40	228	2.9	ND<5	13	42		22	ND<1	ND<1	ND<1	ND<10	
MW-7	4/11/2002	30.07	31.13	0	-1.06	39.00	350	4.0	ND<5	14	61		20	ND<1	ND<1	ND<1	ND<10	
MW-7	7/2/2002	32.15	31.27	0	0.88	39.35	180	4.0	ND<1	12	60		41	ND<2	ND<2	ND<2	ND<10	*Resurveyed
MW-7	10/3/2002	32.15	31.44	0	0.71	39.30	520	7.2	ND<1	24	130		52	ND<2	ND<2	ND<2	13J	
MW-7	1/21/2003	32.15	31.20	0	0.95	39.23	650	11.0	ND<1	44	180		41	ND<2	ND<2	ND<2	ND<10	
MW-7	4/29/2003	32.15	30.86	0	1.29	39.14	170	2.8 J	ND<1	12	51		26	ND<2	ND<2	ND<2	ND<10	
MW-7	7/24/2003	32.15	30.60	0	1.55	39.17	ND<50	1.3 J	ND<1	4.8 J	17		18	ND<2	ND<2	ND<2	ND<10	
MW-7	10/17/2003	32.15	30.44	0	1.71	39.20	210	3.5J	ND<1	16	57		28	ND<2	ND<2	ND<2	ND<10	
MW-7	1/30/2004	32.15	30.36	0	1.79	39.18	200	4.8 J	ND<1	24	48		33	ND<2	ND<2	ND<2	ND<10	
MW-7	4/19/2004	32.15	30.37	0	1.78	39.20	420	8.7	ND<1	48	84		38	ND<2	ND<2	ND<2	ND<10	
MW-7	7/8/2004	32.15	30.54	0	1.61	39.22	ND<50	ND<1	ND<1	1.7 J	3.3 J		5.5	ND<2	ND<2	ND<2	ND<10	
MW-7	11/8/2004	32.15	30.31	0	1.84	39.21	140	1.8 J	ND<1	13	18		32	ND<2	ND<2	ND<2	ND<10	
MW-7	1/21/2005	32.15	29.81	0	2.34	39.19	73 J	ND<1	ND<1	2.3 J	1.2 J		46	ND<2	ND<2	ND<2	22 J	
MW-7	4/7/2005	32.15	28.94	0	3.21	39.13	ND<50	ND<1	ND<1	ND<1	ND<1		20	ND<2	ND<2	ND<2	ND<10	
MW-7	8/17/2005	32.15	28.31	0	3.84	39.03	1,300	420	13 J	1,500	800		240	ND<20	ND<20	ND<20	1,500	
MWIO	10/21/2002	29.25	28.31	0	0.94	49.95	91J	MD <1	NID <1	NID <1	NID <1		1.4	ND -2	ND 2	MD <2	100	mot commerced
MW-8	10/31/2002		28.31	0		49.95		ND<1	ND<1	ND<1	ND<1		14	ND<2	ND<2	ND<2	180	not surveyed
MW-8 MW-8	1/21/2003 4/29/2003	29.25 29.25	28.34	0	0.91 1.28	49.97	ND<50 ND<50	ND<1 ND<1	ND<1 ND<1	ND<1 ND<1	ND<1 ND<1		2.8 J 4.1 J	ND<2 ND<2	ND<2 ND<2	ND<2 ND<2	14 J 58	
MW-8	7/24/2003	29.25	27.78	0	1.47	49.97	ND<50	ND<1	ND<1	ND<1	1.0 J		4.1 J 11	ND<2	ND<2	ND<2	240	
MW-8	10/17/2003	29.25	27.70	0	1.47	49.92	55J	ND<1	ND<1	ND<1	ND<1		10	ND<2	ND<2	ND<2	520	
MW-8	1/30/2004	29.25	27.70	0	1.73	49.90	ND<50	ND<1	ND<1	ND<1	ND<1		5.1	ND<2	ND<2	ND<2	520	
MW-8	4/19/2004	29.25	27.49	0	1.76	49.93	ND<50	ND<1	ND<1	ND<1	ND<1		8.2	ND<2	ND<2	ND<2	220	
MW-8	7/8/2004	29.25	27.54	0	1.71	49.78	ND<50	ND<1	ND<1	ND<1	ND<1		5.4	ND<2	ND<2	ND<2	370	
MW-8	11/8/2004	29.25	27.42	0	1.83	49.73	ND<50	ND<1	ND<1	ND<1	ND<1		8.1	ND<2	ND<2	ND<2	120	
MW-8	1/21/2005	29.25	26.87	0	2.38	49.71	ND<50	ND<1	ND<1	ND<1	ND<1		6.0	ND<2	ND<2	ND<2	21 J	
MW-8	4/7/2005	29.25	26.65	0	2.60	49.65	ND<50	ND<1	ND<1	ND<1	ND<1		2.6 J	ND<2	ND<2	ND<2	13 J	
MW-8	8/17/2005	29.25	25.38	0	3.87	49.40	140	24 J	ND<10	ND<10	ND<10		44 J	ND<20	ND<20	ND<20	ND<100	
	0/1//2003	47.43	20.00	U	3.01	77.70	170	27.5	110/10	110/10	11D/10		77.0	110 \20	110 \20	1110 \ 20	1110/100	
171 77 -0																		
MW-9 MW-9	10/31/2002 1/21/2003	29.44 29.44	28.50	0	0.94	49.60	200 52 J	12 ND<1	ND<1	1.2J ND<1	ND<1		170	ND<2 ND<2	ND<2 ND<2	ND<2	1,800	not surveyed

Table 2. Historical Groundwater Analyses and Gauging Results Chevron Environmental Management Company Service Station No. 9-0857 1790 North Long Beach Boulevard, Long Beach, California

		Top of	Depth	NAPL	GW	Depth				Ethyl-	Total	MTBE						
Well	Date	Casing	to GW	Thickness	Elevation	of Well	TPHg	Benzene	Toluene	Benzene	Xylenes	8020/8021	MTBE	ETBE	DIPE	TAME	TBA	
ID	Sampled	(feet)	(feet)	(feet)	(feet)	(feet)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	Comments
MW-9	4/29/2003	29.44	28.15	0	1.29	49.72	91 J	ND<1	ND<1	ND<1	ND<1		110	ND<2	ND<2	ND<2	580	
MW-9	7/24/2003	29.44	27.95	0	1.49	49.65	ND<50	ND<1	ND<1	ND<1	ND<1		36	ND<2	ND<2	ND<2	170	
MW-9	10/17/2003	29.44	27.79	0	1.65	49.63	87J	ND<1	ND<1	ND<1	ND<1		56	ND<2	ND<2	ND<2	1,200	
MW-9	1/30/2004	29.44	27.64	0	1.80	49.33	ND<50	ND<1	ND<1	ND<1	ND<1		6.3	ND<2	ND<2	ND<2	94	
MW-9	4/19/2004	29.44	27.67	0	1.77	49.27	ND<50	ND<1	ND<1	ND<1	ND<1		12.0	ND<2	ND<2	ND<2	760	
MW-9	7/8/2004	29.44	27.73	0	1.71	49.25	ND<50	ND<1	ND<1	ND<1	ND<1		12	ND<2	ND<2	ND<2	900	
MW-9	11/8/2004	29.44	27.57	0	1.87	49.25	91 J	ND<1	ND<1	ND<1	ND<1		ND<2	ND<2	ND<2	ND<2	ND<10	
MW-9	1/21/2005	29.44	27.05	0	2.39	49.19	ND<50	ND<1	ND<1	ND<1	ND<1		ND<2	ND<2	ND<2	ND<2	ND<10	
MW-9	4/7/2005	29.44	26.20	0	3.24	49.19	ND<50	ND<1	ND<1	ND<1	ND<1		13	ND<2	ND<2	ND<2	160	
MW-9	8/17/2005	29.44	25.55	0	3.89	49.03	ND<50	ND<10	11 J	ND<10	ND<10		ND<20	ND<20	ND<20	ND<20	ND<100	
VS-1	4/11/2002		30.47			38.75	582	ND<1	ND<5	ND<5	ND<5		642	ND<1	ND<1	7.2	306	
V D-1	4/11/2002		30.47			30.73	302	ND(1	TVD<3	ND	TVD<3		042	TVD<1	IND\1	7.2	300	
VS-2	4/11/2002		29.93			38.80	ND<100	ND<1	ND<5	ND<5	ND<5		5.9	ND<1	ND<1	ND<1	ND<10	

Table 2. Historical Groundwater Analyses and Gauging Results Chevron Environmental Management Company Service Station No. 9-0857 1790 North Long Beach Boulevard, Long Beach, California

Well Date Casing to GW Thickness Elevation of Well TPHg Benzene Tolure Benzene Xylenes \$020,8021 MTBC ETBE DIPE TAME TBA			Top of	Depth	NAPL	GW	Depth				Ethyl-	Total	MTBE						
VS.3	Well	Date	Casing	to GW	Thickness	Elevation	of Well	TPHg	Benzene	Toluene	Benzene	Xylenes	8020/8021	MTBE	ETBE	DIPE (ng/L)	TAME	TBA	Comments
VS-4	ID	Sampled	(leet)	(leet)	(leet)	(Ieet)	(leet)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	Comments
WS-5	VS-3	4/11/2002		30.24			38.60	26,700	46	ND<50	2,540	7,180		ND<10	ND<10	ND<10	ND<10	ND<100	
Trip Blank 1/21/1999	VS-4	4/11/2002		30.81			8.80	5,540	ND<1	ND<5	ND<5	ND<5		7,220	ND<1	ND<1	106	657	
Trip Blank 479/1999 ND-500 ND-03 ND-03 ND-03 ND-06 ND-10 ND-500 ND-03 ND-03 ND-03 ND-06 ND-10 ND-500 ND-03 ND-03 ND-03 ND-05	VS-5	4/11/2002		30.49			39.90	1,540	ND<1	ND<5	ND<5	ND<5		2,010	ND<1	ND<1	21	ND<10	
Trip Blank 479/1999 ND-500 ND-03 ND-03 ND-03 ND-06 ND-10 ND-500 ND-03 ND-03 ND-03 ND-06 ND-10 ND-500 ND-03 ND-03 ND-03 ND-05	Trip Blank	1/21/1999						ND<500	ND<0.3	ND<0.3	ND<0.3	ND<0.6	ND<10						
Trip Blank 1/17/1999 ND-500 ND-03 ND-03 ND-03 ND-06 ND-10 ND-500 ND-03 ND-03 ND-03 ND-06 ND-50 ND-500 ND-03 ND-03 ND-03 ND-03 ND-06 ND-50 ND-500 ND-03 ND-03 ND-03 ND-05 ND-																			
Trip Blank 1/10/2000		7/27/1999						ND<500	ND<0.3	ND<0.3	ND<0.3	ND<0.6	ND<10						
Trip Blank 4/5/2000	Trip Blank	11/3/1999						ND<500	ND<0.3	ND<0.3	ND<0.3	ND<0.6	ND<5.0						
Trip Blank 7/12/2000	Trip Blank	1/10/2000						ND<500	ND<0.3	ND<0.3	ND<0.3	ND<0.6	ND<5.0						
Trip Blank 11/1/2000 ND<500 ND<0.3 ND<0.3 ND<0.3 ND<0.6 ND<5 BTEX by 8021B	Trip Blank	4/5/2000						ND<500	ND<0.3	ND<0.3	ND<0.3	ND<0.6	ND<5.0						
Trip Blank 1/3/2001	Trip Blank	7/12/2000						ND<500	ND<0.3	ND<0.3	ND<0.3	ND<0.6	ND<5.0						
Trip Blank 4/24/2001 ND<100 ND<0.3 ND<0.3 ND<0.3 ND<0.3 ND<0.3 ND<0.5 BTEX by 8021B	Trip Blank	11/1/2000						ND<500	ND<0.3	ND<0.3	ND<0.3	ND<0.6	ND<5						BTEX by 8021B
Trip Blank 7/10/2001 ND	Trip Blank	1/3/2001						ND<100	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0						
Trip Blank 10/17/2001 ND ND<1 ND<5 ND<5 ND<5 ND<1	Trip Blank	4/24/2001						ND<100	ND<0.3	ND<0.3	ND<0.3	ND<0.6		ND<5					BTEX by 8021B
Trip Blank 1/2/2002 ND<100 ND<1 ND<5 ND<5 ND<5 ND<1 ND<2	Trip Blank	7/10/2001						ND<100	ND<0.3	ND<0.3	ND<0.3	ND<0.6	ND<5						BTEX by 8021B
Trip Blank 4/11/2002 ND<100 ND<1 ND<5 ND<5 ND<5 ND<5 ND<1 ND<2	Trip Blank	10/17/2001						ND<100	ND<1	ND<5	ND<5	ND<5		ND<1	ND<1	ND<1	ND<1	ND<10	
Trip Blank 7/2/2002 ND<50 ND<1 ND<1 ND<1 ND<2 ND<2 ND<2 ND<2 ND<2 ND<10 Trip Blank 7/2/2002 ND ND<1	Trip Blank	1/2/2002						ND<100	ND<1	ND<5	ND<5	ND<5		ND<1	ND<1	ND<1	ND<1	ND<10	
Trip Blank 7/2/2002 ND<50 ND<1 ND<1 ND<1 ND<2 ND<2 ND<2 ND<2 ND<2 ND<2 ND<2 ND<2 ND<10 Trip Blank 10/3/2002 ND<50 ND<1 ND<1 ND<1 ND<2 ND<2 ND<2 ND<2 ND<2 ND<10 Trip Blank 10/3/2002 ND<50 ND<1 ND<1 ND<1 ND<2 ND<2 <td>Trip Blank</td> <td>4/11/2002</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>ND<100</td> <td>ND<1</td> <td>ND<5</td> <td>ND<5</td> <td>ND<5</td> <td></td> <td>ND<1</td> <td>ND<1</td> <td>ND<1</td> <td>ND<1</td> <td>ND<10</td> <td></td>	Trip Blank	4/11/2002						ND<100	ND<1	ND<5	ND<5	ND<5		ND<1	ND<1	ND<1	ND<1	ND<10	
Trip Blank 10/3/2002 ND<50 ND<1 ND<1 ND<1 ND<2 ND<2 ND<2 ND<10 Trip Blank 10/31/2002 ND<50	Trip Blank	7/2/2002						ND<50	ND<1	ND<1	ND<1	ND<1		ND<2	ND<2	ND<2	ND<2	ND<10	
Trip Blank 10/31/2002 ND<50 ND<1 ND<1 ND<1 ND<2 ND<2 ND<2 ND<2 ND<10 Trip Blank 1/21/2003 ND<50	Trip Blank	7/2/2002						ND<50	ND<1	ND<1	ND<1	ND<1		ND<2	ND<2	ND<2	ND<2	ND<10	
Trip Blank 1/21/2003 ND<50 ND<1 ND<1 ND<1 ND<2 ND<2 ND<2 ND<2 ND<2 ND<10 Trip Blank 4/29/2003 ND<50	Trip Blank	10/3/2002						ND<50	ND<1	ND<1	ND<1	ND<1		ND<2	ND<2	ND<2	ND<2	ND<10	
Trip Blank 4/29/2003 ND<50 ND<1 ND<1 ND<1 ND<2 ND<2 ND<2 ND<2 ND<10 Trip Blank 7/24/2003 ND<50	Trip Blank	10/31/2002						ND<50	ND<1	ND<1	ND<1	ND<1		ND<2	ND<2	ND<2	ND<2	ND<10	
Trip Blank 7/24/2003 ND<50 ND<1 ND<1 ND<1 ND<2 ND<2 ND<2 ND<2 ND<10 Trip Blank 1/01/2003 ND<50	Trip Blank	1/21/2003						ND<50	ND<1	ND<1	ND<1	ND<1		ND<2	ND<2	ND<2	ND<2	ND<10	
Trip Blank 10/17/2003 ND<50 ND<1 ND<1 ND<1 ND<2 ND<2 ND<2 ND<2 ND<10 Trip Blank 1/30/2004 ND<50	Trip Blank	4/29/2003						ND<50	ND<1	ND<1	ND<1	ND<1		ND<2	ND<2	ND<2	ND<2	ND<10	
Trip Blank 1/30/2004 ND<50 ND<1 ND<1 ND<1 ND<2 ND<2 ND<2 ND<2 ND<10 Trip Blank 4/19/2004 ND<50	Trip Blank	7/24/2003						ND<50	ND<1	ND<1	ND<1	ND<1		ND<2	ND<2	ND<2	ND<2	ND<10	
Trip Blank 4/19/2004 ND<50 ND<1 ND<1 ND<1 ND<2 ND<2 ND<2 ND<2 ND<10 Trip Blank 7/8/2004 ND<50	Trip Blank	10/17/2003						ND<50	ND<1	ND<1	ND<1	ND<1		ND<2	ND<2	ND<2	ND<2	ND<10	
Trip Blank 7/8/2004 ND<50 ND<1 ND<1 ND<1 ND<2 ND<2 ND<2 ND<2 ND<10 Trip Blank 11/8/2004 ND<50	Trip Blank	1/30/2004						ND<50	ND<1	ND<1	ND<1	ND<1		ND<2	ND<2	ND<2	ND<2	ND<10	
Trip Blank 11/8/2004 ND<50 ND<1 ND<1 ND<1 ND<2 ND<2 ND<2 ND<2 ND<10 Trip Blank 1/21/2005 ND<50	Trip Blank	4/19/2004						ND<50	ND<1	ND<1	ND<1	ND<1		ND<2	ND<2	ND<2	ND<2	ND<10	
	Trip Blank	7/8/2004						ND<50	ND<1	ND<1	ND<1	ND<1		ND<2	ND<2	ND<2	ND<2	ND<10	
Trip Blank 4/7/2005 ND<50 ND<1 ND<1 ND<1 ND<1 ND<2 ND<2 ND<2 ND<2 ND<10	Trip Blank	11/8/2004						ND<50	ND<1	ND<1	ND<1	ND<1		ND<2	ND<2	ND<2	ND<2	ND<10	
Trip Blank 4/7/2005 ND<50 ND<1 ND<1 ND<1 ND<1 ND<2 ND<2 ND<2 ND<2 ND<10	Trip Blank	1/21/2005						ND<50	ND<1	ND<1	ND<1	ND<1		ND<2	ND<2	ND<2	ND<2	ND<10	
Trip Blank 8/17/2005 ND<50 ND<1 ND<1 ND<1 ND<1 ND<2 ND<2 ND<2 ND<2 ND<10		4/7/2005						ND<50	ND<1	ND<1	ND<1	ND<1		ND<2		ND<2	ND<2	ND<10	
	Trip Blank	8/17/2005						ND<50	ND<1	ND<1	ND<1	ND<1		ND<2	ND<2	ND<2	ND<2	ND<10	

Notes: ug/L = Micrograms per liter

ND = Not detected

NAPL = Non-aqueous phase liquid

TPHg = Total petroleum hydrocarbons as gasoline analyzed by EPA Method 8015M

 $MTBE = Methyl \ tertiary-butyl \ ether \ analyzed \ by \ EPA \ Method \ 8260B$

ETBE = Ethyl tertiary butyl ether analyzed by EPA Method 8260B

DIPE = Di-isopropyl ether analyzed by EPA Method 8260B

 $TAME = Tertiary \ amyl \ methyl \ ether \ analyzed \ by \ EPA \ Method \ 8260B$

TBA = Tertiary butyl alcohol analyzed by EPA Method 8260B

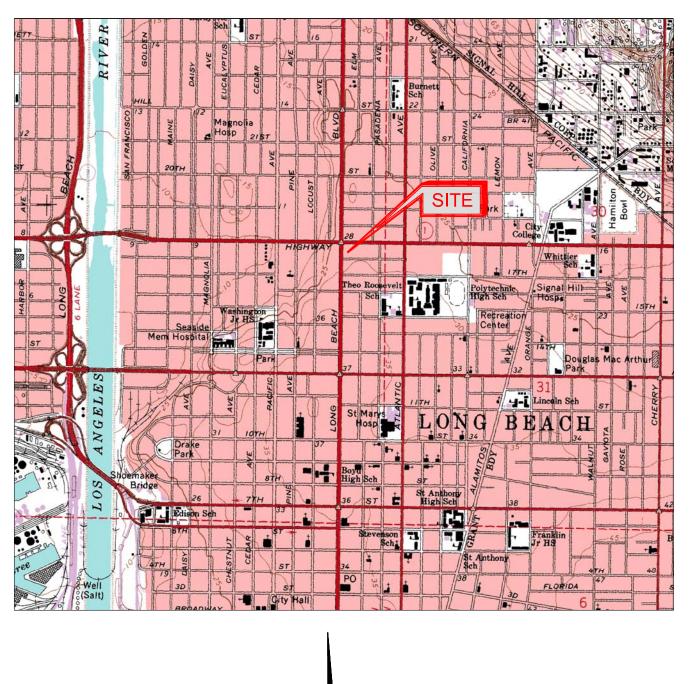
 $J = denotes \ value \ between \ method \ detection \ limit \ and \ detection \ limit \ for \ reporting \ purposes$

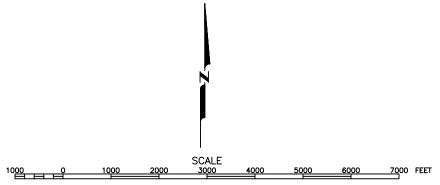
Beginning 11/1/2000, BTEX analyzed by EPA Method 8260B unless noted

*4/16/02, wells resurveyed per AB2886 requirements. Historical elevations measured to NGVD29 datum.

New elevations measured to NAVD88, giving elevations approx. 1.5 to 2.5 feet higher than NGVD29 datum.



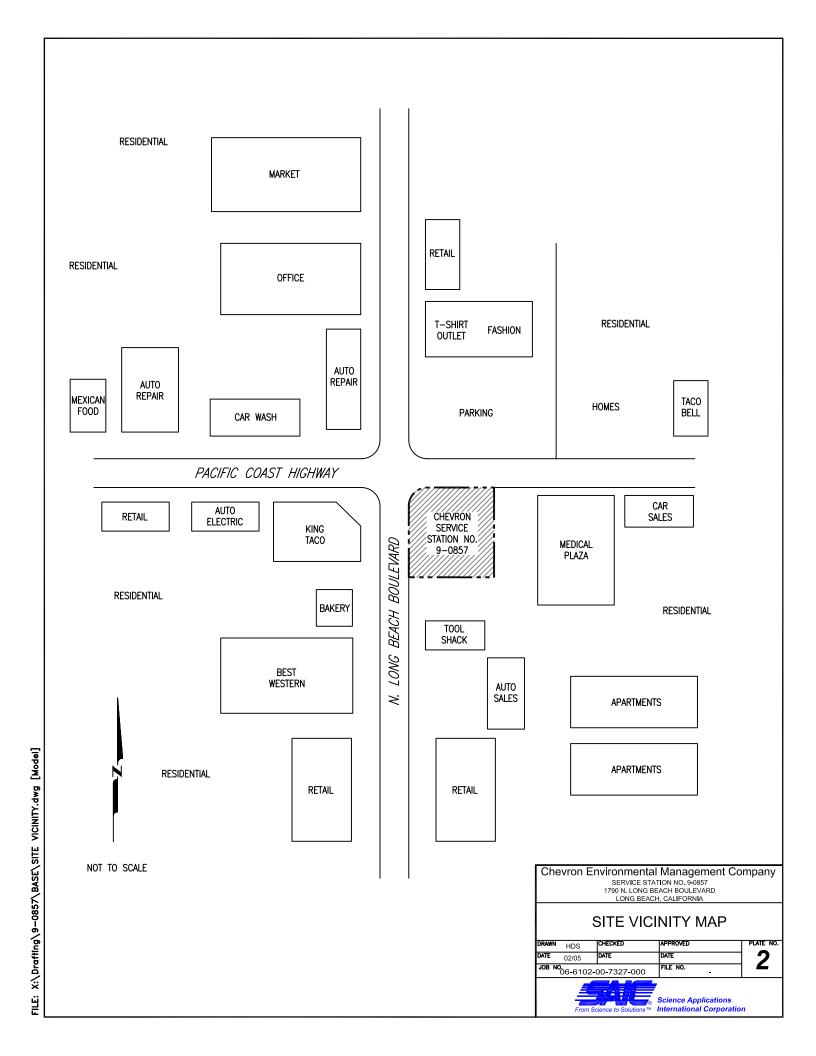


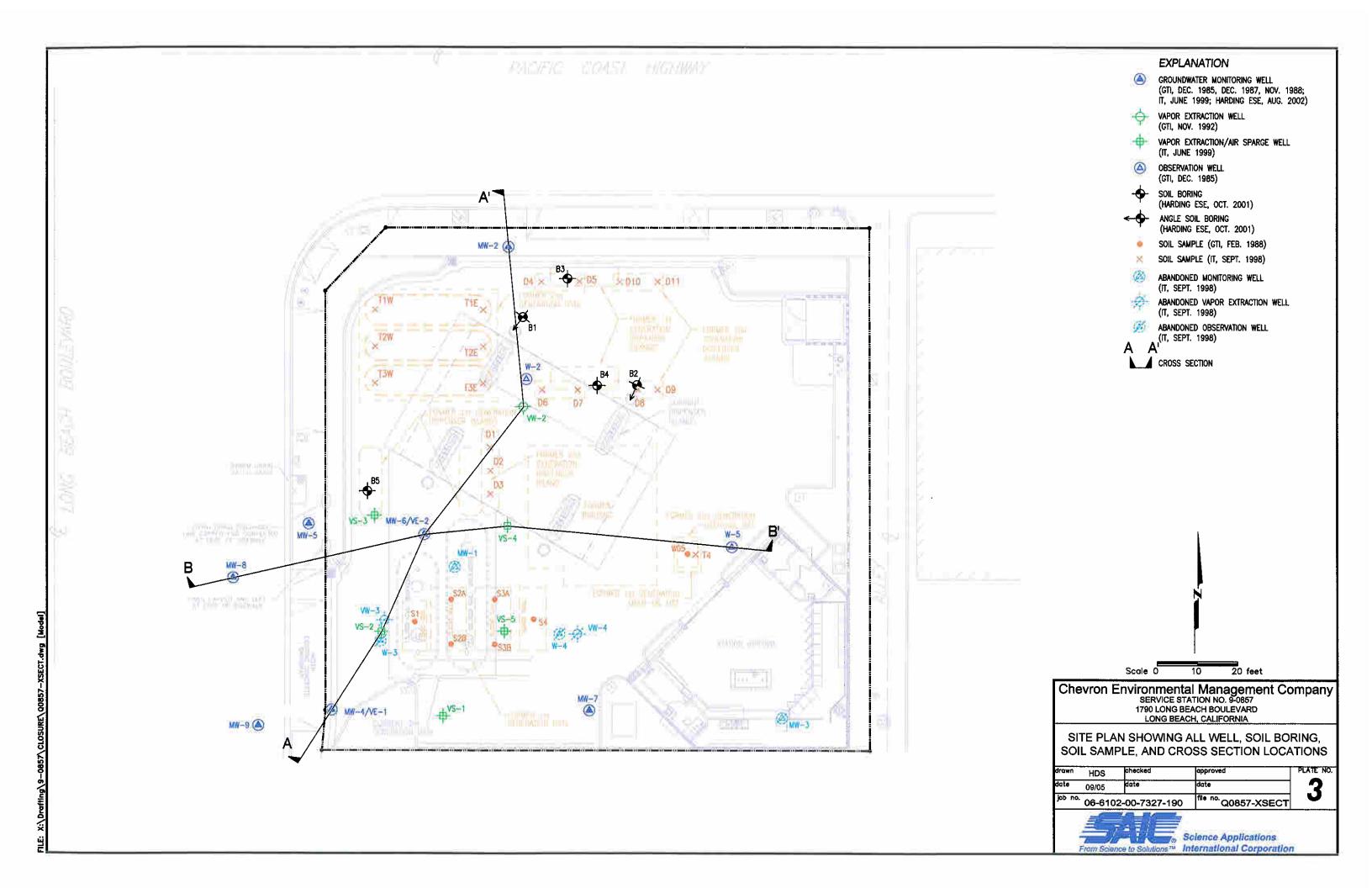


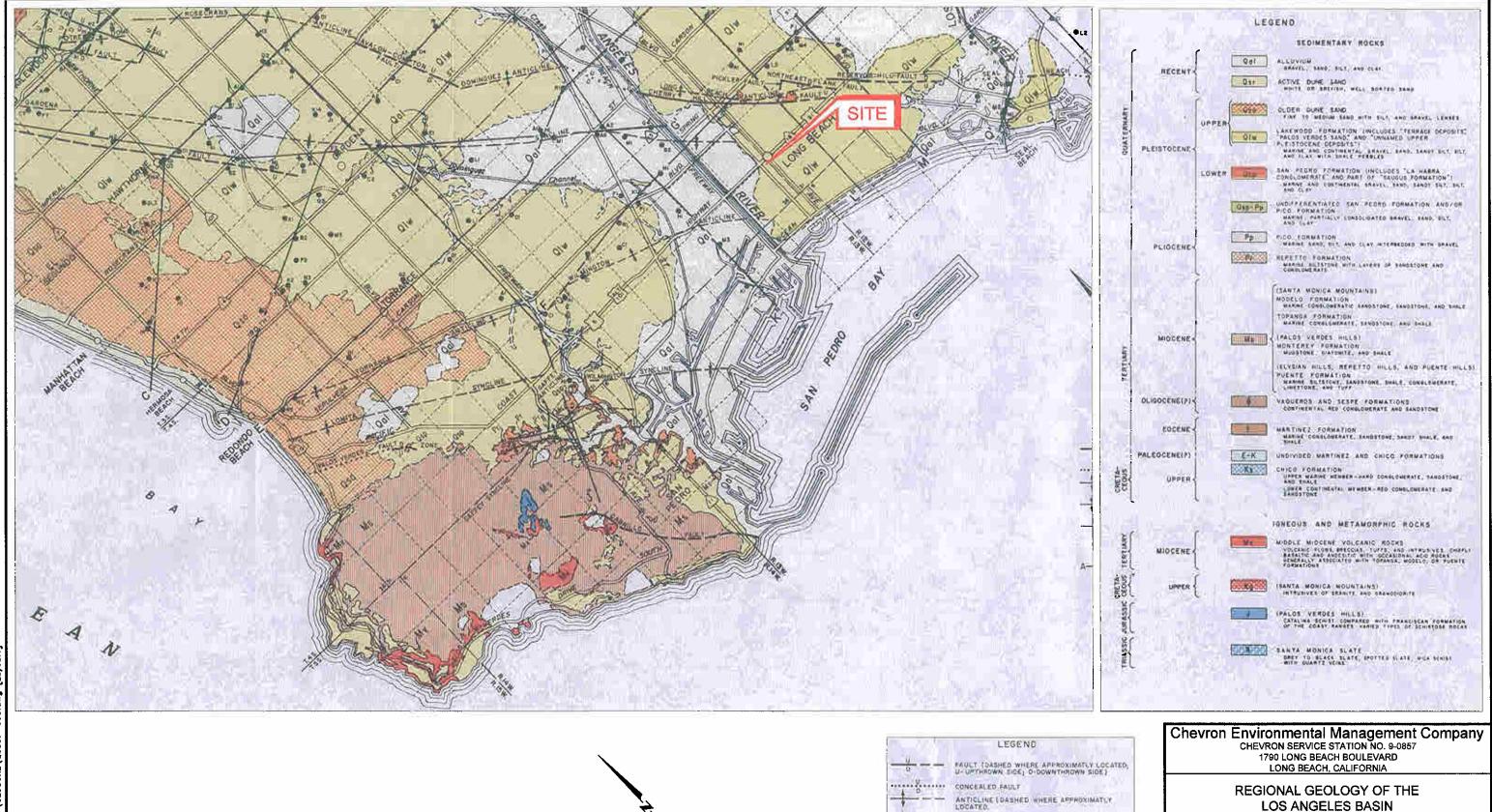
Chevron Environmental Management Company SERVICE STATION NO. 9-0857 1790 LONG BEACH BOULEVARD LONG BEACH, CALIFORNIA SITE LOCATION MAP DRAWN HDS CHECKED APPROVED PLATE NO. DATE 102/105 DATE DATE

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Science Applications
From Science to Solutions™ International Corporation







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WELLS USED IN PREPARATION OF GEOLOGIC SECTIONS.

LINE LOCATION OF SECLOGIC BECTIONS SHOWN ON PLATES BA THROUGH 60:

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06-6102-00-7327-190

DATE 09/05

PLATE NO.

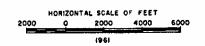
FILE NO. Q0857-003

Science Applications

From Science to Solutions International Corporation

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REFERENCE:
STATE OF CALIFORNIA, DEPARTMENT OF WATER RESOURCES, SOUTHERN CALIFORNIA DISTRICT GROUND WATER GEOLOGY OF THE COASTAL PLAIN OF LOS ANGELES COUNTY AREAL GELOGY: DATED: 1961, PLATE: 3B



DEPARTMENT OF WATER RESOURCES
SOUTHERN CALIFORNIA DISTRICT

GROUND WATER GEOLOGY OF THE
COASTAL PLAIN OF
LOS ANGELES COUNTY

REFERENCE:
STATE OF CALIFORNIA, DEPARTMENT OF WATER RESOURCES, SOUTHERN CALIFORNIA DISTRICT GROUND WATER GEOLOGY OF THE COASTAL PLAIN OF LOS ANGELES COUNTY DATED: 1961, PLATE: 6A

LEGEND

AQUICLIDES AND DEEPER UNDIFFERENTIATED FORMATIONS
AQUIFERS IN RECENT ALLUVIUM (INCLUDES THE GASPUR
AND BALLONA AQUIFERS)

AQUIFERS IN LAKEWOOD FORMATION (INCLUDES THE
ARTESIA, EXPOSITION, GAGE, AND GARDENA AQUIFERS)

AQUIFERS IN SAN PEDRO FORMATION (INCLUDES THE HOLLYDALE, JEFFERSON, LYNWOOD, SILVERADO, AND SUNNYSIDE AQUIFERS)

WATER WELLS
OIL WELLS
FAULTS

Chevron Environmental Management Company CHEVRON SERVICE STATION NO. 9-0857

1790 LONG BEACH BOULEVARD LONG BEACH, CALIFORNIA

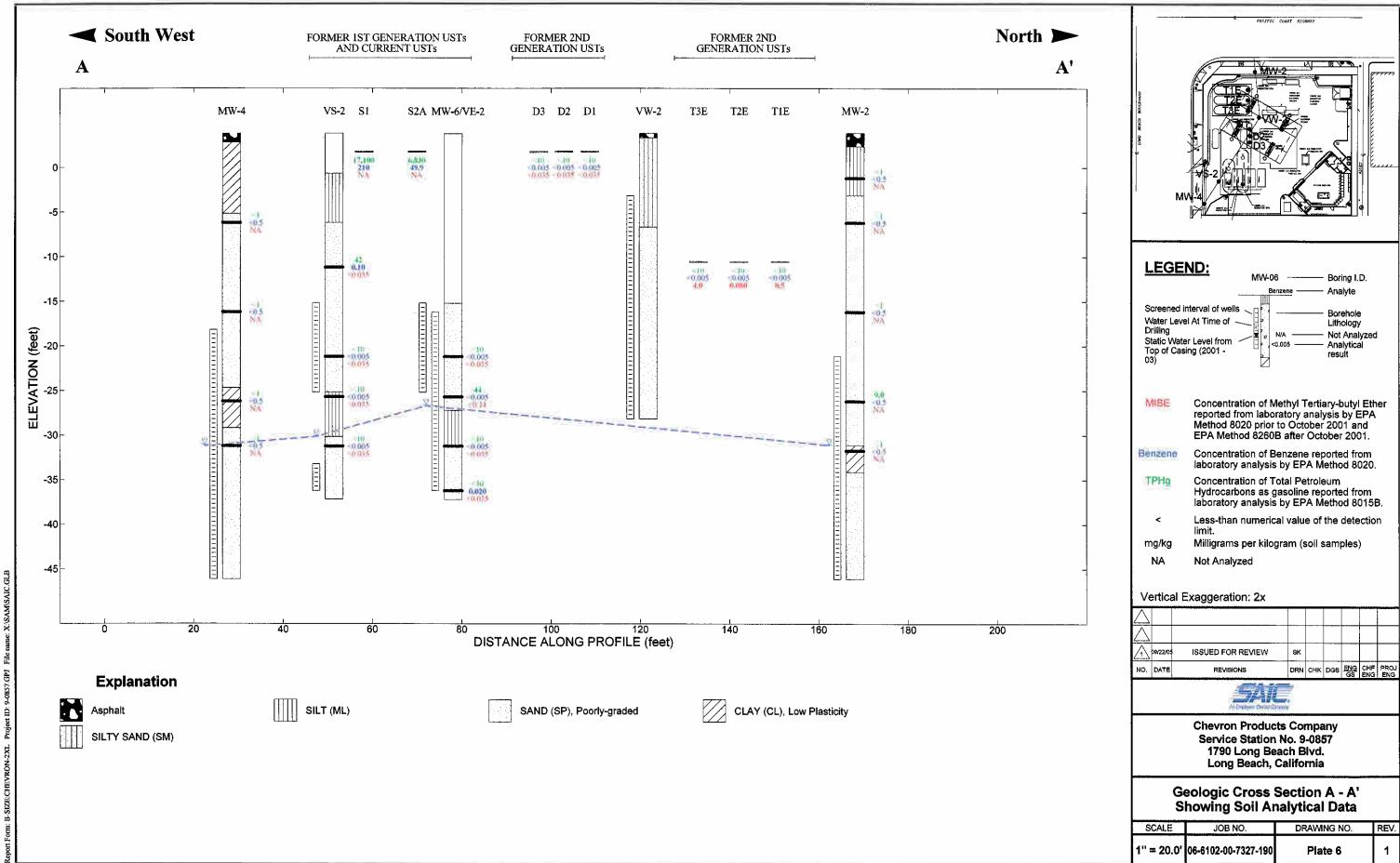
IDEALIZED GEOLOGIC CROSS SECTION L-L" OF THE LOS ANGELES BASIN

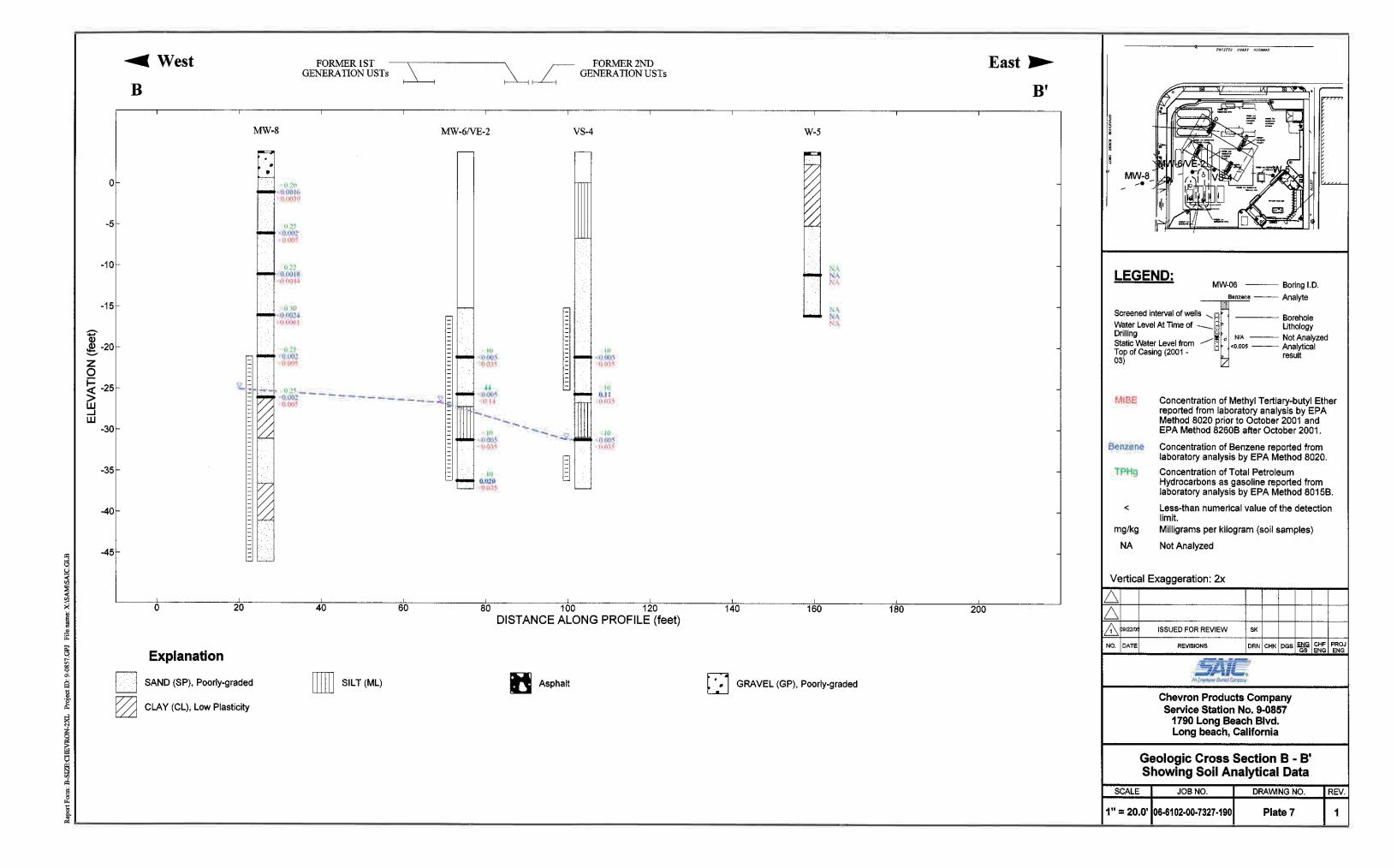
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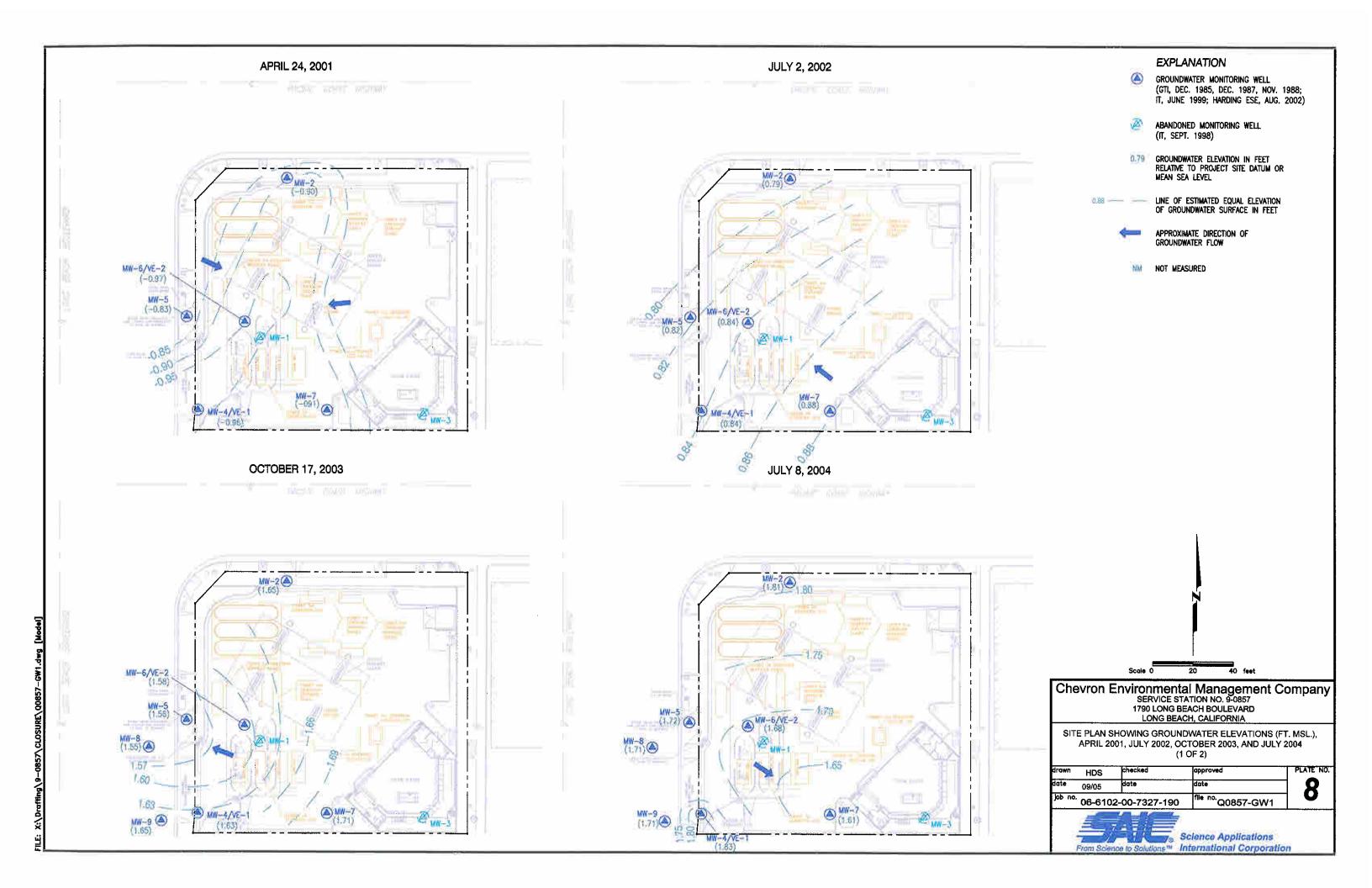
DATE 09/05 DATE DATE

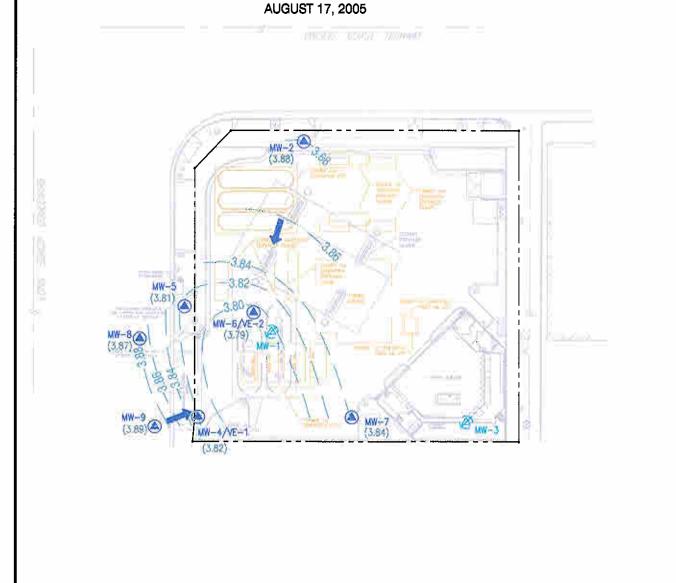
JOB NO. 06-6102-00-7327-190 FILE NO. 98071-004











EXPLANATION

GROUNDWATER MONITORING WELL (GTI, DEC. 1985, DEC. 1987, NOV. 1988; IT, JUNE 1999; HARDING ESE, AUG. 2002)

ABANDONED MONITORING WELL (IT, SEPT. 1998)

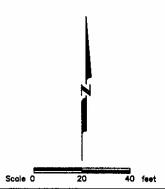
3.88 GROUNDWATER ELEVATION IN FEET RELATIVE TO PROJECT SITE DATUM OR MEAN SEA LEVEL

iline of estimated equal elevation of groundwater surface in feet



APPROXIMATE DIRECTION OF GROUNDWATER FLOW

NOT MEASURED

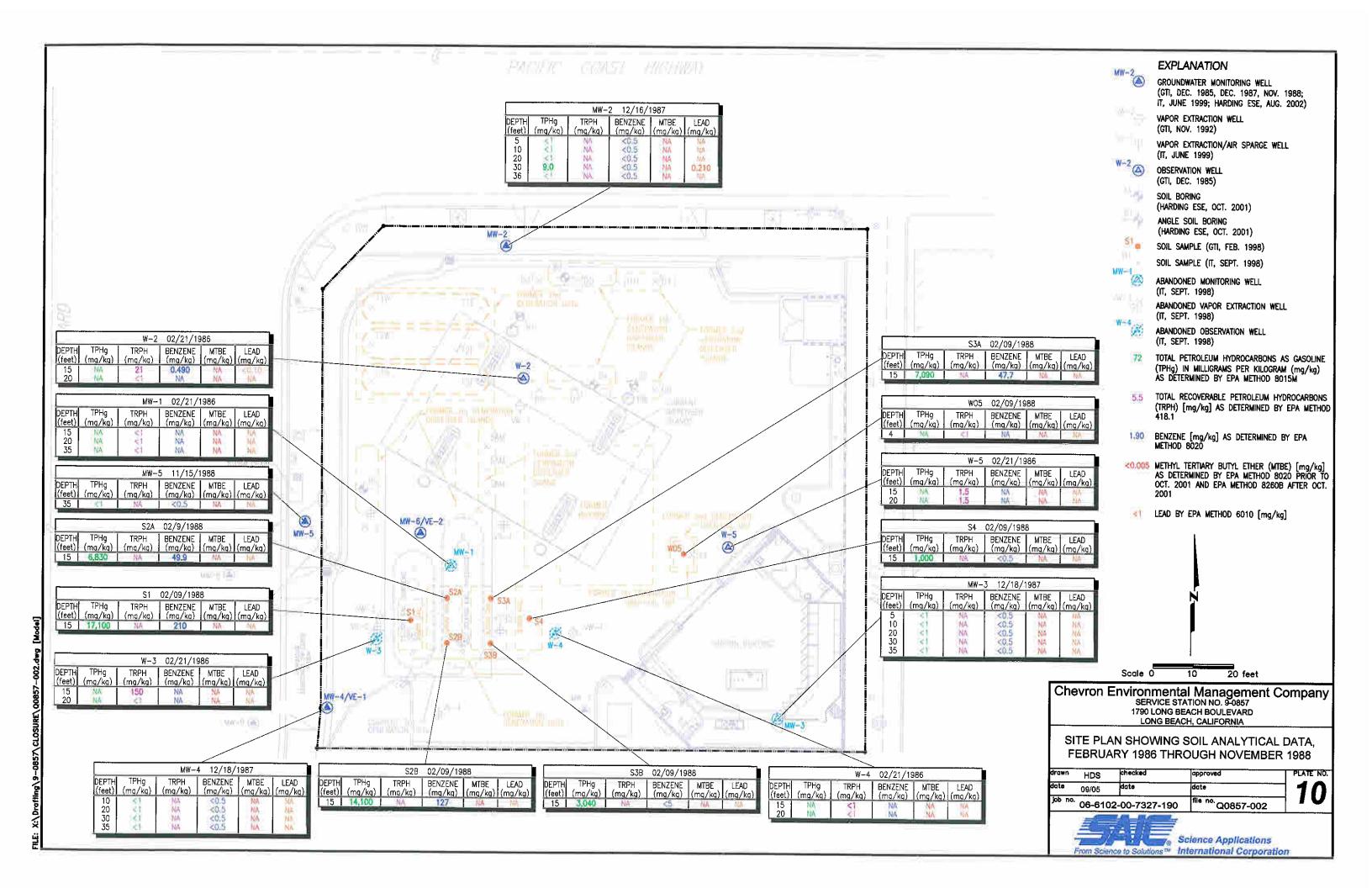


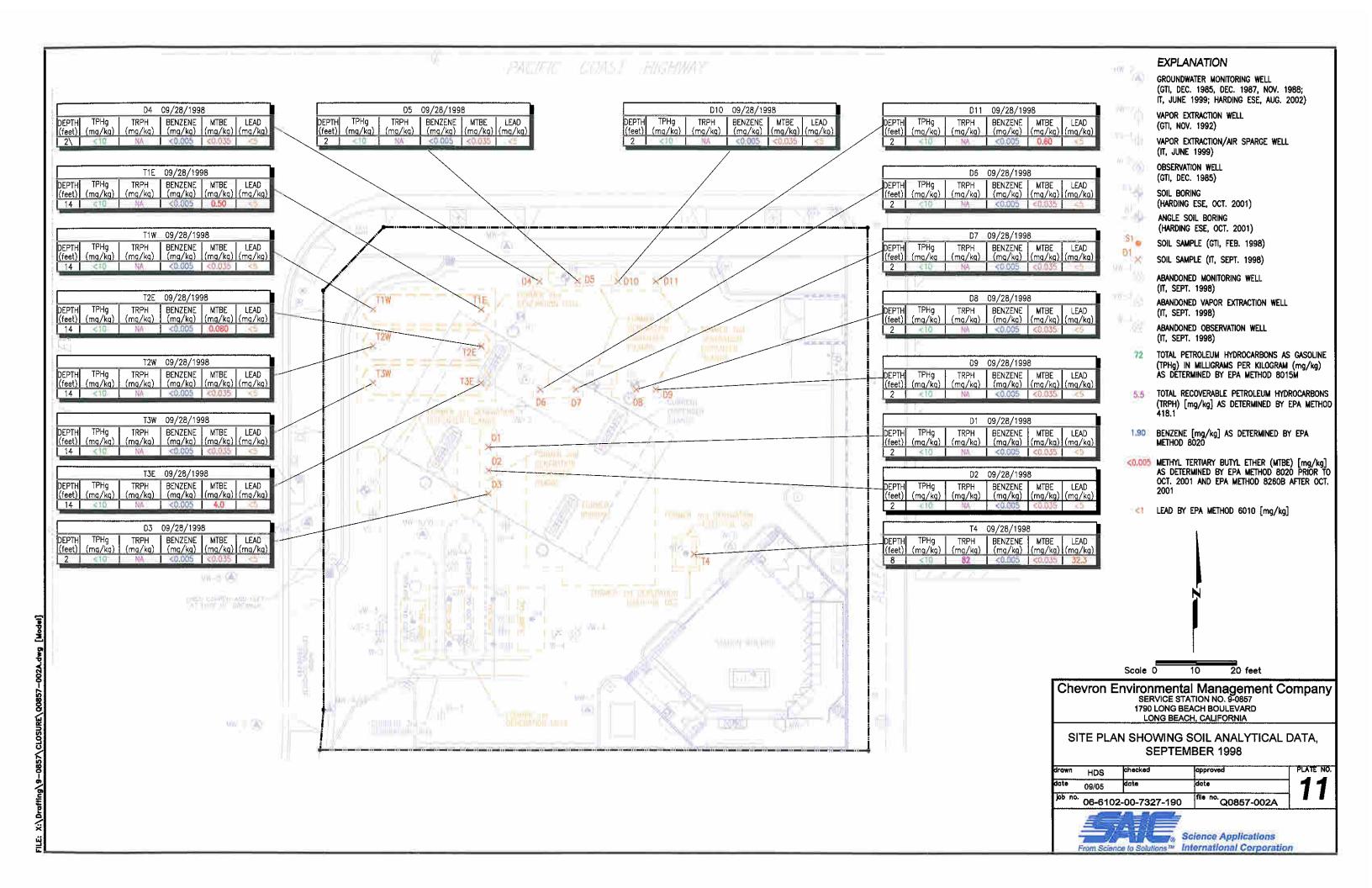
Chevron Environmental Management Company SERVICE STATION NO. 9-0857 1790 LONG BEACH BOULEVARD LONG BEACH, CALIFORNIA

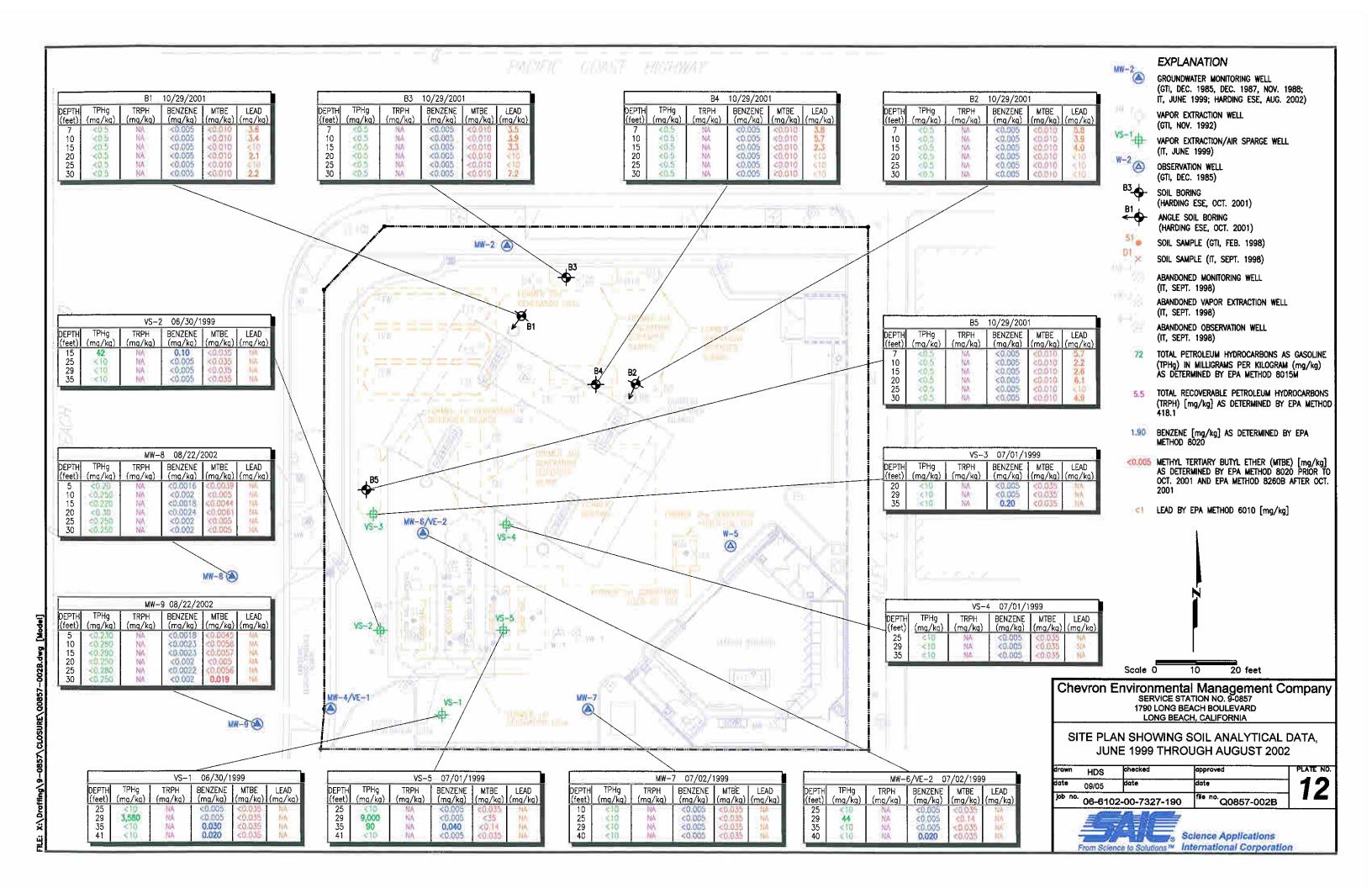
SITE PLAN SHOWING GROUNDWATER ELEVATIONS (FT. MSL.), AUGUST 2005 (2 OF 2)

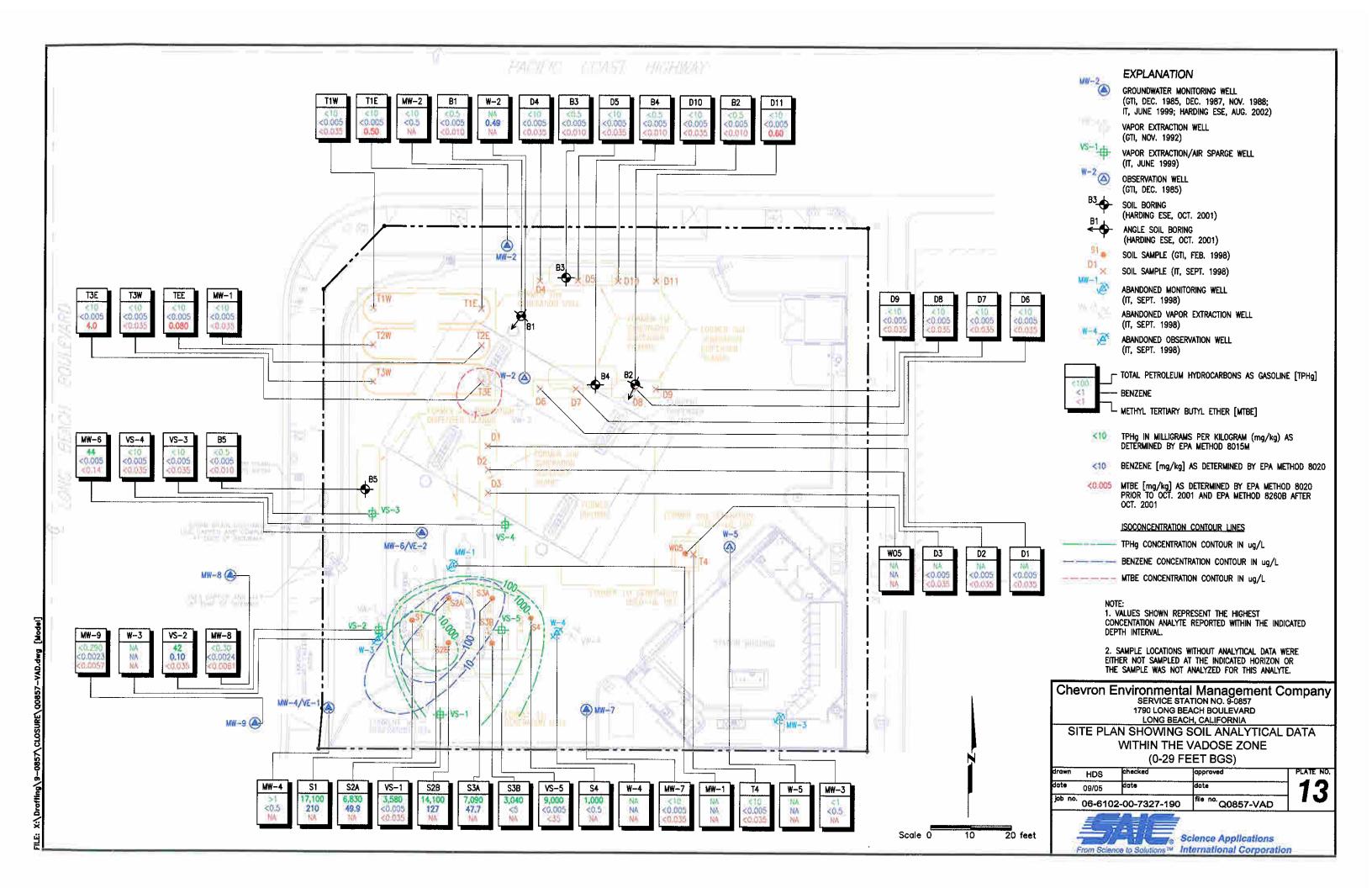
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date	09/05	date	date	1 Q
job no	06-610	2-00-7327-190	file no. Q0857-GW2	

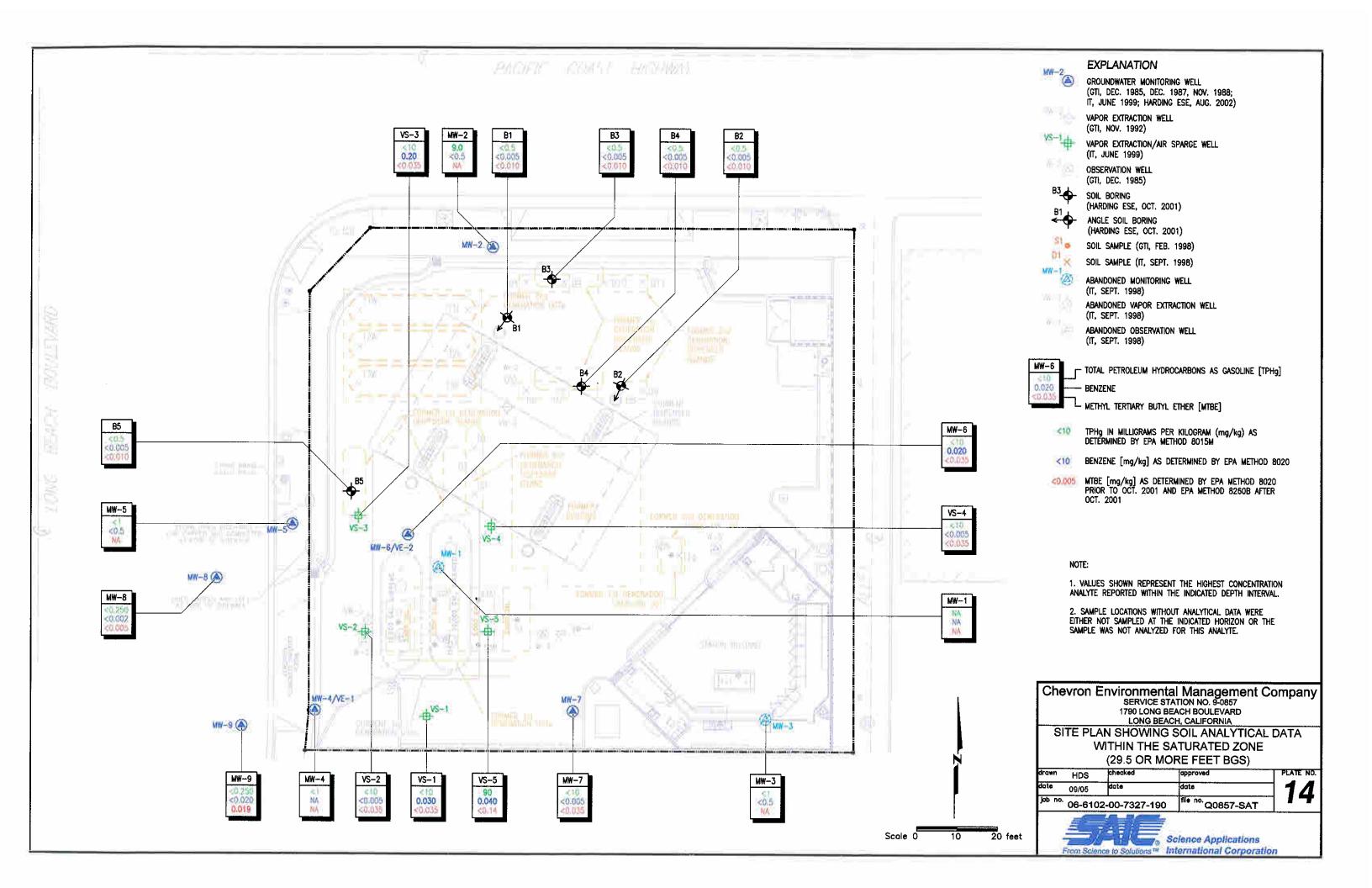


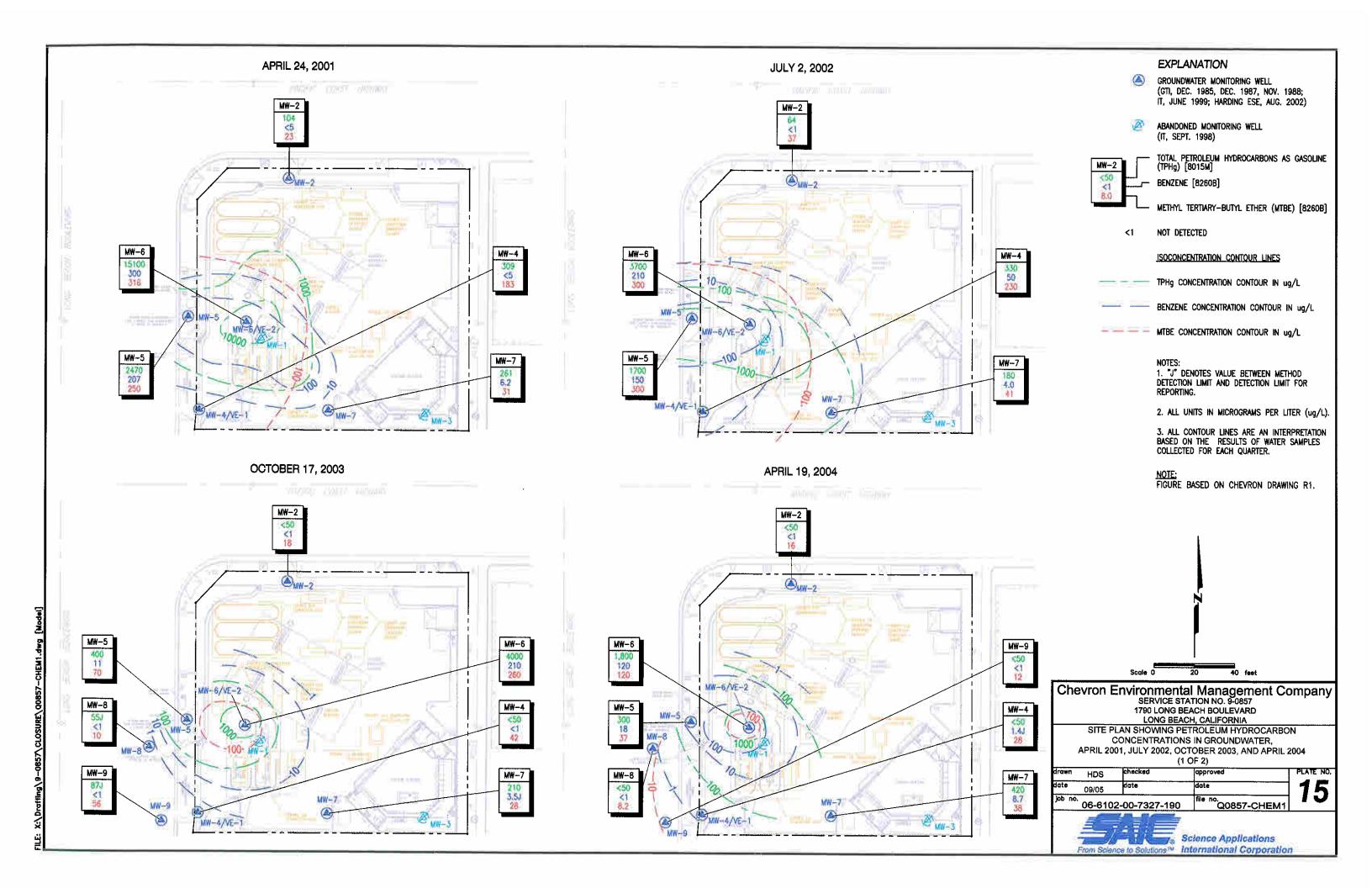


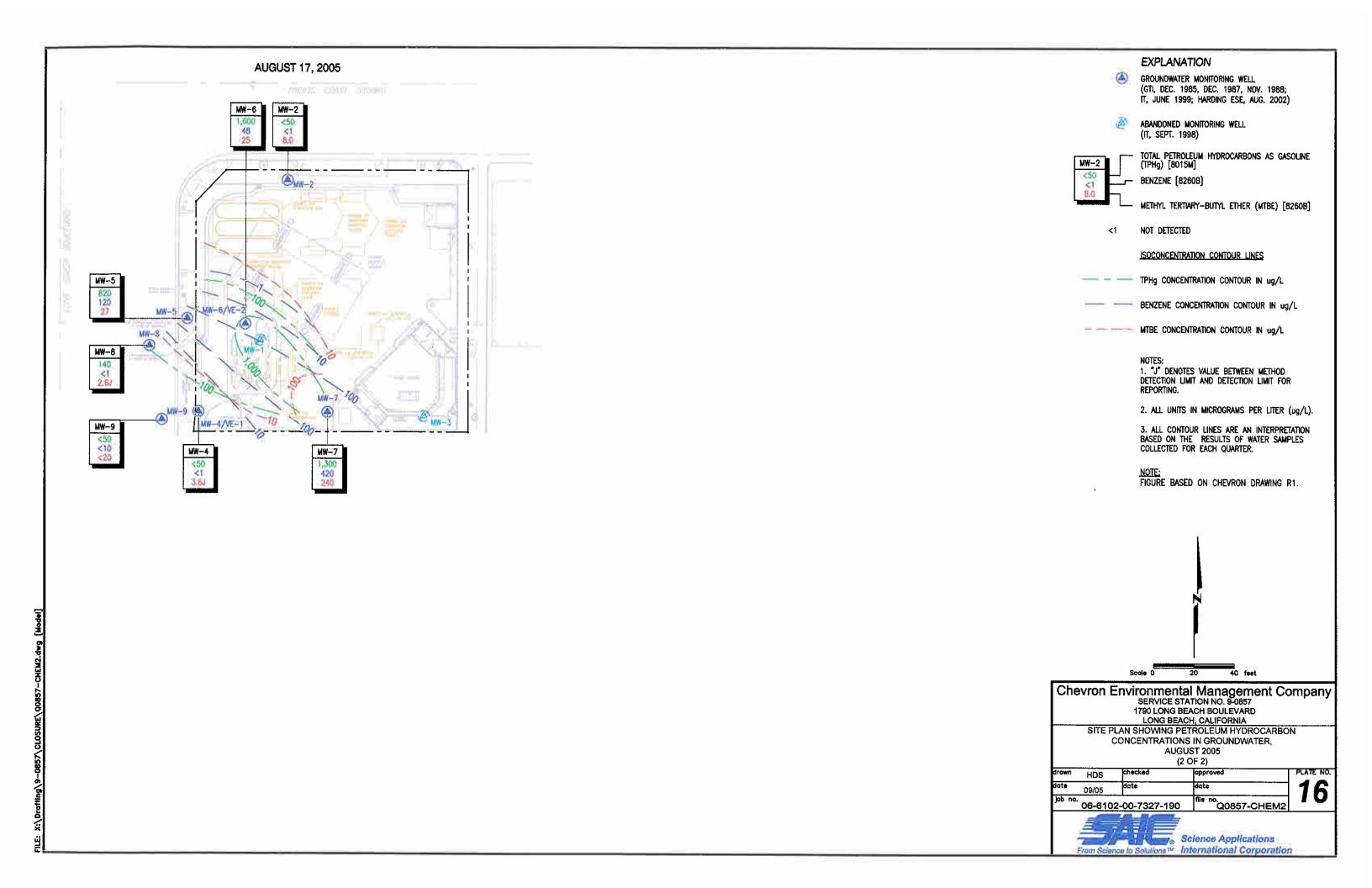












APPENDIX A GROUNDWATER MONITORING WELL AND SOIL BORING LOGS

GT JOB NO.: 21-3304	WELL NO: W-1	SKETCH MAP
OWNER: CHEVRON		
LOCATION: LONG BEACH S LONG BEACH B		
CASING STICKUP:	_TOTAL DEPTH: 40'	
"ELEVATION:DEDRILLING COMPANY:_ ABC	EPTH TO WATER: 35.20'	
DRILLER: RANDY LO	OG BY: W. LORBEER	
DRILL USED: 10" HOLLOW DATE DRILLED: 2-20-86	STEM AUGER	
		·· — Top of Lid
	/ /5//	·
	DESCRIPTION	ON/SOIL CLASSIFICATION
Z Z Z Z Z / Z / 4 / 4 /	(COLOR,	TEXTURE, STRUCTURE)
September 100 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	DESCRIPTION (COLOR,	
- o' -	·	
	i e	INCHES OF ASPHALT BEFORE REACHING
	NATIVE SOILS.	
2.5'	DDOUBL OF BOAR	
	· ·	ST, CLAYEY FINE-GRAINED SAND WITH
	FAIR AMOUNT OF SILT;	SLIGHTLY COHESIVE, LOW PERMEABI-
	CLITY, EARTHY ODOR. O	RADES TO RICH MEDIUM BROWN,
		-GRAINED SANDY CLAY WITH NO HYDRO-
5' 5-7-5	CARBON ODORS.	
	CHECK, HOIST, CERTET	FINE TO MEDIUM-GRAINED SAND.
		ERATELY PERMEABLE, SOUR ODOR.
	(COARSER-GRAINED CLA	YEY SANDAT BASE).
7.5	ODEENTON DROWN	
- ' ' '	Į.	HTLY MOIST, CLAYEY FINE-GRAINED
	SAND; COHESIVE, LOW	PERMEABILITY, NO HYDROCARBON ODORS
SHE	ET1_OF4	Oil Recovery Signature Technology

	SEDTA WETERS		5//2·/	/ 5.	DESCRIPTION/SOIL CLASSIFICATION
71/27	CEPTY WETER				DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURE)
•					GRADES GREEN CLAYEY FINE-GRAINED SAND.
;				-	
10'			4-8	11	DARK GREENISH, MOIST, CLAYEY FINE-GRAINED SAND; VERY
				_	VERY COHESIVE, LOW PERMEABILITY, SOUR ODOR. GRADES
					ABRUPTLY INTO LIGHT TANISH GREEN, MOIST, MEDIUM-GRAINED
					SAND; VERY CLEAN, FEW FINES, NON-COHESIVE, MODERATE
_					PERMEABILITY WITH SLIGHT HYDROCARBON ODORS.
•					
•					·
- 3.5	-				TAN, SLİGHTLY MOIST, CLEAN, FINE-GRAINED SAND; NON-
					COHESIVE, LOW TO MODERATE PERMEABILITY, VERY SLIGHT
_				1	HYDROCARBON ODORS.
5 '		V1-15	7-17	2 2	TAN, SLIGHTLY MOIST, FINE TO MEDIUM-GRAINED SAND,
_					GRADES TO BUFF, SLIGHTLY MOIST, MEDIUM-GRAINED SAND;
_					NON-COHESIVE, MODERATE PERMEABILITY, SLIGHT HYDROCARBON
_					ODORS-MINOR CLAY LENSE IN UPPER PORTION OF SAMPLER
_					(APPROXIMATELY 15).
. 5					TAN, SLIGHTLY MOIST, MEDIUM TO COARSE-GRAINED SAND; NON-
_					COHESIVE, MODERATE TO GOOD PERMEABILITY, SLIGHT HYDRO-
_					CARBON ODORS.
•					
)'		W1-20	9-7-	15	TAN, MOIST, COARSE-GRAINED SAND; NON-COHESIVE, GOOD
					MEABILITY, GRADES INTO BUFF, SLIGHTLY MOIST, FINE TO
_					MEDIUM-GRAINED SAND; NON-COHESIVE MODERATE PERMEABILTY,
-					SLIGHT HYDROCARBON ODORS.
-					
-	闒				
_					

7 2 2 / 2 / 2 / 2 / 2 / 2 / 2 / 2 / 2 /	\$\\\$\\\ <u>\</u>	() 	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURE)
クガス	12/14/	/4/	(COLOR, TEXTURE, STRUCTURE)
		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
2.5			BROWN, SLIGHTLY MOIST, POORLY SORTED, SITY, FINE TO
			COARSE-GRAINED SAND; NON-COHESIVE, MODERATE PERMEABILITY
			WITH SLIGHT HYDROCARBON ODOR.
5'	9.	<u>- 19</u> -3	BUFF, SLIGHTLY MOIST, SILTY, FINE TO MEDIUM-GRAINED
	-		SAND; NON-COHESIVE, LOW TO MODERATELY LOW PERMEABILITY,
			WITH MODERATE HYDROCARBON ODORS.
7.5			BROWN, SLIGHTY MOIST, FINE TO MEDIUM-GRAINED SAND, WITH
			MINOR CLAY; SLIGHTLY COHESIVE, LOW TO MODERATELY LOW
			PERMEABILTY, MODERATELY PERMEABILITY WITH SLIGHT
			HYDROCARBON ODORS.
0'	5-	-9-12	BROWN, SLIGHTLY MOIST, FINE-GRAINED SANDY, TIGHT CLAY
			VERY COHESIVE, MALLEABLE, SLIGHT HYDROCARBON ODORS.
			·
.5'	·		BROWN, SLIGHTLY MOIST, CLAYEY FINE TO MEDIUM-GRAINED
			SAND; SLIGHTLY COHESIVE, LOW TO MODERATELY LOW PER-
			MEABILITY, WITH MODERATE TO GOOD HYDROCARBON ODORS.
35' W	1-35 15	- 50	GREENISH BUFF, MOIST, SILTY, FINE TO MEDIUM-GRAINED
			SAND; SLIGHTLY COHESIVE, MODERATE PERMEABILITY, WITH
			SLIGHT HYDROCARBON ODORS. LIGHT BROWN, TIGHT, THIN
			(2 INCH THICK) CLAY LENSE IN UPPER PORTION OF SAMPLER
			STATE LETT
		L	

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURE)
.51	GREENISH BROWN, VERY MOIST, CLAYEY FINE TO MEDIUM- GRAINED SAND; MODERATELY COHESIVE, MODERATE PERMEABILITY, WITH SOUR ODORS:
	BUFF, WET, FINE TO MEDIUM-GRAINED (MOSTLY MEDIUM) SAND; SLIGHTLY COHESIVE, MODERATE PERMEABILITY, WITH SOUR ODOR.

GT JOB NO.: 21-3304	WELL NO: W-2 SKETCH MAP	
OWNER: CHEVRON LOCATION: LONG BEACH S.S LONG BEACH BLV	6. #857 /D AND PCH	
CASING STICKUP: DEP "ELEVATION: DEP DRILLING COMPANY: ABC DRILLER: RANDY LOG DRILL USED: 10" HOLLOW S DATE DRILLED: 2-21-86	TH TO WATER:	
	∘∘ — Top of Lid	
TO SO TO	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURE)	
	DRILLED THROUGH 2-4 INCHES OF ASHPHALT BEFO	JRE EXCA-
_	VATING BROWN SOIL.	
- 4		
_ 2'	MEDIUM BRWON, SLIGHTLY MOIST, SILTY CLAY, W	IITH MINOR
	AMOUNTS OF FINE-GRAINED SAND; COHESIVE, LOW	PERMEA-
	BILITY, WITH NO HYDROCARBON ODORS.	
_ 5'	7 RICH MEDIUM BROWN, DRY, SANDY, SILTY CLAY;	COHESIVE
	MALLEABLE, LOW PERMEABILITY WITH NO HYDROCA	
	UNIFORM THROUGH 8 FEET.	
8'	GREEN, SLIGHTLY MOIST, SANDY SILTY CLAY; CO	HESIVE, LOW

OFOTA METERS	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)		10 4 10 10 10 10 10 10 10 10 10 10 10 10 10	/ <u> </u>	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURE)
4/0	\$]//			Ser.	
					PERMEABILITY, SOUR ODOR. GRADES TO GREEN, SANDY, CLAYEY
				-	SILT, MODERATELY COHESIVE, LOW PERMEABILITYM WITH SOUR
	-		6-1	- 3- 1	
					WITH MINOR SILT; NON-COHESIVE, MODERATE PERMEABILITY
					WITH SOUR ODOR-CLAY CONTENT INCREASING SLIGHTLY WITH DEPTH.
		ļ			
					GREEN, SLIGHTLY MOIST, SILTY FINE TO MEDIUM-GRAINED SAND, WITH A FEW THIN CLAY LENSES; NON TO SLIGHTLY
					COHESIVE, LOW TO MODERATE PERMEABILITY, WITH A GOOD SOUR ODOR.
	W2-	15	11-2	2-	26 GREENISH TAN, SLIGHTLY MOIST, FINE TO MEDIUM - GRAINED SAND, CAORSENING SLIGHTLY WITH DEPTH; NON-COHESIVE,
					MODERATE PERMEABILITY WITH VERY SLIGHT HYDROCARBON (?) ODOR.
					GREEN, SLIGHTLY MOIST, FINE (MEDIUM)-GRAINED SAND, WITH
					MINOR SILT; NON-COHESIVE, LOW PERMEABILITY WITH SOUR
					·
	W2-	20	10-2	1 -	32 GREENISH GREY, SLIGHTLY MOIST, SILTY MEDIUM (FINE)
					GRAINED SAND; NON-COHESIVE, LOW TO MODERATE PERMEABILITY,
					SLIGHT ODOR.
10111111					
			<u> </u>		·

GT JO	B NO.: 21-3	304	WELL NO: W-3	SKETCH MAP
OWNER	: CHEVRON			
LOCAT	ION: LONG BI	EACH S.	S. #857 VD AND PCH	
CASINO	STICKUP:		TOTAL DEPTH: 20	
DRILLII	VATION: NG COMPAN'	DEP	TH TO WATER:	
DRILLE	R: RANDY	LOG	BY: G. ALBRIGHT	
DATE I	USED: 10" DRILLED: 2-2	1-86	STEM AUGER	
				·· — Top of Lid
OF DIA			DESCRI	
,	THE	0 2 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DESCRI	IPTION/SOIL CLASSIFICATION
P.T.	E 2 / 2 / 2	4/34/5	(CO)	LOR, TEXTURE, STRUCTURE)
Q.		SA SA	//	
0'_		+	f	
			DRILLED THROUGH	THREE INCHES OF ASHPHALT.
_ 2'_			MEDIUM BROWN, SI	IGHTLY MOIST, FINE-GRAINED SANDY,
			1	GHTLY COHESIVE, LOW PERMEABILITY,
			WITH NO HYDROCAF	
5'_		6-12-1	6 MEDIUM BROWN, D	ORY, SANDY, SILTY CLAY; COHESIVE, LOW
				LLLEABLE WITH NO HYDROCARBON ODORS.
			UNFORM THROUGH 8	
8 '			GREEN, SLIGHTLY	MOIST, SANDY, SILTY CLAY; COHESIVE,
		SHEE	r1_0F2	Oil Recovery

12 / 2 / 2 / 2 / 2 / 2 / 2 / 2 / 2 / 2 /	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURE)
E 4/9/4/4/4/	(COLOR, TEXTURE, STRUCTURE)
	LOW PERMEABILITY, WITH SOUR ODOR.
:	
	•
10 5-7-12	GREEN, MOIST, CLAY WITH ASPHALT PEBBLES IN UPPER PORTION
	OF SAMPLER GRADES TO GREEN SILT SAND; SLIGHT TO NON-
	COHESIVE, LOW PERMEABILITY, WITH SLIGHT, FRESH HYDRO-
	CARBON ODOR.
	·
2.5	GREEN, MOIST, SILTY, SAND; WITH MINOR CLAY, SLIGHTLY
	COHESIVE, MODERATE PERMEABILITY, WITH MODERATE, FRESH,
	HYDROCARBON ODOR.
	THE NOCE AND UNDER.
5' W3-15 9-18-2	3 GREEN, SLIGHTLY MOIST, MEDIUM ODATUG
	GREEN, SLIGHTLY MOIST, MEDIUM-GRAINED SAND GRADES TO
	FINE-GRAINED SAND, WITH THIN (2"THICK) CLAY LENSES;
	SLIGHTLY COHESIVE, MODERATE PERMEABILITY, WITH GOOD
	HYDROCARBON ODORS:
.5'	
	GREEN, MOIST, FINE-GRAINED SAND, WITH MINOR SILT;
	SLIGHTLY COHESIVE, MODERATE PERMEABILITY, WITH FRESH
	MODERATE HYDROCARBON ODOR.
_	
- 1000 A	
)' W3-20 7-14-1	GREEN, SLIGHTLY MOIST, FINE-GRAINED SAND, WITH MINOR
	SILT, SLIGHTLY COHESIVE, MODERATE PERMEABILITY, WITH
	SLIGHT SOUR HYDROCARBON ODOR.

GT JOB NO.: 21-3304 WELL	L NO: W-4 SKETCH MAP
OWNER: CHEVRON	
LOCATION: LONG BEACH S.S. #	857
CASING STICKUP:TOTA	
"ELEVATION: DEPTH	TO WATER:
DRILLING COMPANY ABC	i i
DRILLER: RANDY LOG BY: DRILL USED: 10" HOLLOW STE	G. ALBRIGHT M AUGER
DATE DRILLED; 2-21-86	
	•• — Top of Lid
THE THE STANT OF T	\
	DESCRIPTION (SOLIT OF TOTAL OF THE PARTY OF
	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURE)
	(OCEON, TEXTORE, STRUCTURE)
Selection of the select	
1 1959/01	
- DR	ILLED THROUGH 4 INCHES OF ASHPHALT REFORE REACHING
S0	IL.
_ 2' MED	IUM BROWN, SLIGHTLY MOIST, SANDY CLAYEY SILT; SLIGHTLY
	ESIVE, LOW PERMEABILITY, WITH NO HYDROCARSON ODOR.
	ROWN, MOIST, SITY CLAY WITH MINOR SAND; COHESIVE,
	W PERMEABILTY, WITH NO HYDROCARBON ODORS.
5' 5-8-11 09	
_ ⁵ ' 5-8- 11 GF	EEN, MOIST, SILTY CLAY; COHESSIVE. MALLEABLE, LOW
PE	RMEABILITY, WITH SOUR ODOR.
10 10 10 10 10 10 10 10 10 10 10 10 10 1	
_ 7' _ GF	PER (REDDISH PROMI) STICUTE V MOIST STATE
	REEN (REDDISH BROWN), SLIGHTLY MOIST, FINE-GRAINED
	NDY, SILTY CLAY, COHESIVE, LOW PERMEABILTY, WITH
SC	UR ODOR GRADES TO MOIST, SILTY CLAY WITH SOUR
	Oil Recovery
SHEET1	OF
	GROUNDWATER TECHNOLOGY

		/	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURE)
		/ \	DESCRIPTION/SOIL CLASSIFICATION
,z·			(COLOR, TEXTURE, STRUCTURE)
2		S. S.	
,	19/12/2/	_/	
-			ODOR AT 8 FEET.
;			
•			
0'	4-7-	- -	GREEN, MOIST, SILTY CLAY, COHESIVE, LOW PERMEABILITY,
_			WITH SOUR ODOR. GRADES INTO A GREEN, MOIST, SILTY, CLAYEY,
•			FINE GRAINED SAND; SLIGHTLY COHESIVE, LOW PERMEABILTY
•			WITH SOUR ODOR.
-		1	WITH GOOK GOOK.
۔ 15.		1	CDECH MOTOT CTUTY TO VICE
			GREEN, MOIST, SILTY, FINE TO MEDIUM GRAINED SAND,
-		-	SLIGHTLY COHESIVE, MODERATE PERMEABILITY, WITH SOUR OF OR.
_			·
•			
5 ' ⁻	W4- 5 6-13	21	GREEN, MOIST, SILTY, CLAYEY SAND GRADES TO FINE TO
_]	MEDIUM-GRAINED SAND; COHESIVE, MODERATE PERMEABILITY,
-			WITH SOUR ODOR.
-			
•		1	
.5'		1	BROWN CRAY SLICHTLY MOIST MEDIUM ORATMED CAME
•-		1	BROWN-GRAY, SLIGHTLY MOIST, MEDIUM-GRAINED SAND, SLIGHTLY
•-		1	NON-COHESIVE, MODERATE PERMEABILITY, WITH VERY SOUR ODOR.
•			
-			
•			
0'_	W4-20 5-16	-2	2 GREEN, SLIGHTLY MOIST, SILTY, CLAYEY FINE-GRAINED SAND;
	進		SLIGHTLY TO MODERATELY COHESIVE, LOW TO MODERATE PER-
-			MEABILITY WITH SOUR ODOR. GRADES TO BROWNISH GREY,
			SILTY, FINE TO MEDIUM-GRAINED SAND WHICH COARSENS
-			WITH DEPTH, SLIGHTLY COHESIVE, MODERATE TO GOOD PER-
			MEABILITY, WITH SLIGHT SOUR ODOR.
		i I	

3T JC	B V	10.:_21	-3304	_ \	WELL NO: W-5		SKETCH MAP	
							; ;	
)WNE	. C	HEVRO	IN					
OCAT	10N:	: LONG	BEACH	S.5	6. #857			
		LONG	BEACH	BLV	- -			
					TOTAL DEPTH: 20	-		
ELE	VATI	COMP.	ANY:	OEP.	TH TO WATER:			
TOUTE	:p. K	ANDY		LOG	RY: G. ALBRIGHT			
DODE:	HICE	ը։ 10"	HOLLO	W ST	EM AUGER	-		
DATE	DRIL	LED:	2-21-8	0		-		
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J. S. C.	S.	/8 //	2/2	1/20	~//			
Q.	9/	(14) (14) (14) (14) (14) (14) (14) (14)	0 / 0 / 0 / 0 / 0 / 0 / 0 / 0 / 0 / 0 /	6×/	DESCRIP (COLO			
- 0'-	f			\neg				
				-	DRILLED THROUGH	4 INCHES	OF ASHPHAL	T BEFORE REACHING
					SOILS.			',
1-5'	1				MEDIUM BROWN, SL	IGHTLY M	OIST, SANDY	, SILTY CLAY:
					MODERATELY COHES	IVE, LOW	PERMEABILI	TY, NO HYDROCARBON
					ODORS.			
3'.					REDDISH BROWN, S	TGHTLY	MOIST SAND	V STITY OLAY
				-		IVE, LOW	PERMEABILT	Y, WITH NO HYDRO
				-	CARBON ODORS.			
				_				
. 5' -			6-1	<u> d-1</u>	5 REDDISH BROWN, D	RY, SILT	Y CLAY, WITH	H MINOR FINE-
				7				LOW PERMEABILITY,
				-	WITH NO HYDROCARI	<u>BUNEODOR</u>	<u>S.</u>	
- 7'				-			V-11	
- ' -				4	REDDISH BROWN, DI	RY, SAND	Y, CLAYEY S	ILT (FINE-GRAINED
			<u>.</u>	┧╽	SAND); SLIGHTLY			
				_	NO HYDROCARBON OF			T. T. T. Andrews
				<u>L</u>				Oil Recovery.
			Sł	HEET		DUNDWATER TE	CHNOLOGY	Systems

	CEDIA METERS	~/s	5.// /	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURE)
<				DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURE)
Z.Z.	A. A.	E 5 5 5 5 5 5 5 5 5	Z/Z/,	2
V	4/0	§]/§]	15/5	
<i>:</i>				
•				
10'			2-4-7	GREENISH GREY TO GREY BROWN DRY, SILTY, FINE-GRAINED
•				SAND; SLIGHTLY COHESIVE, LOW PERMEABILITY, WITH SOUR
•				ODOR.
•				
2.5				GREYISH GREEN, DRY TO SLIGHTLY MOIST, MEDIUM-GRAINED
				SAND, WITH MINOR SILT; MODERATE PERMEABILITY, WITH
	2000 2000 2000 2000		'	SOUR ODOR.
_				
5'_		W5-15	<u>20-3</u> 6	-35 GREEN, SLIGHTLY MOIST, SILTY, MEDIUM-GRAINED SAND,
-				GRADES INTO GREEN, SLIGHTLY MOIST, VERY SILTY, FINE-
-				GRAINED SAND; SLIGHTLY COHESIVE, LOW PERMEABILITY,
-				WITH SOUR ODOR.
-				
7.5 -				GREEN, SLIGHT MOIST, VERY SILTY, FINE-GRAINED SAND;
•				LOW PERMEABILITY, WITH SOUR ODOR.
_				
: ינ			+-+	PALE GREYISH GREEN, SLIGHTLY MOIST, MEDIUM-GRAINED
J				SAND, NON-COHESIVE, GOOD PERMEABILITY, WITH SLIGHT
-				SORU ODOR.
-				
-			-	
-				
-	388	ļ		

DRILL / LITHOLOGIC LOG BORING/WELL NUMBER MW-2



PROJECT Chevron SS #857	OWNER Chevron USA, Inc.
LOCATION PCH/Long Beach Blvd	PROJECT NUMBER 214-175-3015
DATE DRILLED 12/16/87	TOTAL DEPTH OF HOLE
OUDCACC ELEVATION	DEPTH TO WATER
SCREEN: DIA. 4" LENGTH	30' SLOT SIZE U.U2U
CASING: DIA. 4" LENGTH	TYPE PVC
DOUL INC COMPANY Western	DRILL METHOD HSA/CA Modif. Sampler
DRILLER Mike & Sam	LOG BY Paul Parmentier

DRIL									
DEPTH (FEET)	РІРЕ ОВ	FILL	PID (PPM)	SAMP NUMBER	ដ្ឋា	вгом	GRAPHIC LOG	SOIL CLASS (USCS)	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
5 -		0,000	2			8 14		ML,	Asphalt Reddish dark brown silt, no odor.
IO		0000000 000000000000000000000000000000	2			30 17		SP	Green, odoriferous, silty sand, minor odor.
20			2			12222	***************************************		Grayish green fine grained sand minor, sour, HC odor



bounter made in					
WELL &	SAMPI	LES	2 <u>1</u> 2	୍ର ଅନ୍ଧର	DESCRIPTION/SOIL CLASSIFICATION
PIPE CONSTITUTE TO (PPM)		TYPE BLOW	GRAPHIC LOG	S S S S S S S S	(COLOR, TEXTURE, STRUCTURES)
PIPE FILL	NUMBER	트립	O		
			-		
			-: :: : : : : : : : : : : : : : : : : :		
30-	1		4		
				SP	Grayish green fine grained sand.
35	1	12		CL	Greenish to brown clayey silt, no odor in brown
					deeper sample (36')
40				SP	Fine grained sand, locally medium grained,
					water saturated, no odor
				**	
45					
					occasional thin silty layers
				***	occasional thin silty layers
50					
			1		
			<u>:</u>		
55			-		
			- -	7	
			F	1	
			- -	4	
			}	=	
60-			t_		

DRILL / LITHOLOGIC LOG BORING/WELL NUMBER MW-3



PROJECT Chevron SS #857			Chevron USA, Inc.
LOCATION PCH/Long Beach Blvd		PROJECT N	NUMBER 214-175-3015
DATE DRILLED 12/18/87		TOTAL DE	PTH OF HOLE 56'
		DEPTH TO	WATER35'
SCREEN: DIA. 4"	LENGTH	30'	SLOT SIZE 0.020
CASING: DIA. 4"	LENGTH	24.	TABL TAG
	CC110111	DRILL: ME	THOD HSA / CA Modif. Sampler
Mike S Sam		LOG BY	Paul Parmentier
DRILLER - PIKE & Sam			

DRIL	LEF	(
DEPTH (FEET)	PIPE SO	FILL	PID (PPM)	SAMP NUMBER	вгом	GRAPHIC LOG	SOIL CLASS (USCS)	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
		000000 0000000 0000000 000000 000000 0000				2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		Asphalt
5 -		0000000 9000000 9000000000000000000000		1		March Marc	CL	Brown clayey silt, malleable, soft, no odor
		0		1	713		S S	Fine grained gray sand, no odor
15-	7	70000000000000000000000000000000000000						Light brown, tan, silty sand, no odor
20				2	13		SP	Fine grained sand, no odor.
25								



1
, no

DRILL / LITHOLOGIC LOG BORING/WELL NUMBER MW-4



PROJECT_ Chevron SS #857	OWNER Chevron USA, Inc.
LOCATION PCH/Long Beach Blvd	PROJECT NUMBER 214-175-3015
DATE DRILLED 12/18/87	TOTAL DEPTH OF HOLE _56'
CHOCACE ELEMATION	DEPTH TO WATER35'
CODEEN DIA 4" LENGTH	30' SLOT SIZE 0.020
CASING: DIA. 4" LENGTH	22' TYPE PVC DRILL METHOD HSA / CA Modif. Sampler
ODILLING COMPANY Weshtech	DRILL METHOD HSA / CA Modif. Sampler
DRILLER Mike & Sam	LOG BY Paul Parmentier

DRIL	LEN			ike a s					LOG BI_ FAUL FAIRIEITELEI
DEPTH (FEET)	PIPE 000	FILL	PID (PPM)	SAMP NUMBER	ĬΠ	вгом	GRAPHIC LOG	SOIL CLASS (USCS)	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
		0.00							Asphalt
5 -		0						CL	dark brown clayey silt, no odor, soft
10		20000000000000000000000000000000000000	1			4		SP	green, fine grained, silty sand, MC odor
20-		yecotopy stonesses stoness	1			12		P. St.	same fine grained sand, greenish gray, minor MC odor
25-							#		



SEPTH CREET PIPE CONST	PID (PPM)	SAMP NUMBER	μJ		GRAPHIC	SOIL CLASS (USCS)	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
30				12		CL	Brown, locally green at unit contact, silt, harder, no odor, harder.
35-							Medium grained sand, no odor, water saturated
45 50 55-							no odor, occasional thin silty units

BORING /	<i>WELL NUN</i>	IC LOG IBER	mw-5 CROUNDWATER mw-5 CHNOLOGY INC.
PROJECT	CHEVRON #0	857	OWNERCHEVRON USA, INC.
LOCATION1	790 PACIFI	C COAST HW	PROJECT NUMBER _214-175-3015-03
			8 TOTAL DEPTH OF HOLE 55'
			DEPTH TO WATER35 * .
			25' SLOT SIZE .020 30' TYPE SCH 40 PVC
			DRILL METHOD HSA
DRILLER	Mario		LOG BY Ken Thomas
	SAMPLES		
(feet) (feet) PIPE 3 PILL 12 PID PID	NUMBER H A NO.	GRAPHIC CLASS LOG (USCS)	
5 10 15 15 16 16 16 16 16 16		CL	Clay:silty, dark brown. Silty:clayey, brown. Sand:silty, fine grained light gray.

DRILL	-			OG	GROUNDWATER
BORING	G / I				_MW-5TECHNOLOGYINC.
(feet) PIPE SA FILL TYTH	PID (PPM)	SAMI NUMBER	GRAPHIC LOG	SOIL CLASS (USCS)	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
30 -				SP	Sand:as before, but less silt.
35 —				CL	Clay:silty, light gray, moist.
45 —				SP	Sand:medium to fine grained brown/gray, thin dispersed silty horizons,water saturated.
50					-
					- SHEET 2 OF 2

Drilling Log



Vapor Point VW-2

Project .	CHV/1790 1790 Loc	Lona Bea na Beach	ach/PCH Blvd.	Projec	C	Owner <u>Chevron Products Company</u> 0. 021403366 Date drilled 11/13/92	See Site Map For Boring Location					
Surface	Elev	To	otal Hole	Depth .	32.0	ft. Diameter 0.67 ft.	COMMENTS:					
						Static	COMMENTS.					
Screen:	Dia <u>3 in.</u>	Le	ength <u>25</u>	ft.		Type/Size <u>.020 in.</u>	Hand Augered to					
Casing: [)ia <u><i>3 in</i>.</u>	Le	ength <u>5.5</u>	ft.		Type <u>Sched. 40 PVC</u>	5 feet below grade. No underground					
Filter Pack Material #3 Monterey Sand Rig/Core Type CME-55 utilities encountered.												
Drilling Company <u>A & R Drilling</u> Method <u>Hollow-Stem Auger</u> Permit # <u>NR</u> Driller <u>G. Mark Smith</u> Log By <u>Gary Pranae</u>												
		<u>tn</u> D=+==+= t'-			L	og By Gary Pranae						
Checked		rarmentiei		_ Licer		40, RG 3915 Poultant						
Depth (ft.)	Well	OId (mdd)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Descripti (Color, Texture, S Trace < 10%, Little 10% to 20%, Some	tructure)					
2-												
-	T THE TAXABLE PARTY OF TAXABLE											
- 0 -			Γ		Aso	6-inch A/C						
						Silty SAND: Reddish brown, about 40% moist, no hydrocarbon odor.	siit, about 60% fine sand;					
- 2 -				. · . ·		moist, no try di ocut bott ouot.						
-												
4 -												
					SM							
- 6 -						Silty SAND: Olive gray, about 65% fins	sand, about 15% silt; moist					
<u> </u>						to very moist, moderate hydrocarbon	cGor.					
-8 -	Ø≡Ø											
- 10 -	屬三屬					2445 50						
10 -			ſ	المبلبل		SAND: Olive gray, about 100% very fine strong hydrocarbon edor.	e sand; moist to very moist,					
						ott sing try drocal both coor.						
– 12 –												
- 14 -	圖畫圖											
. ,			l M									
				 :::::								
– 16 <i>–</i>	陽三陽			 :::::								
┞╶┤	岡三岡		ľ		SP	SAND: Light olive gray, about 100% firs	Crained component: moist					
- 18 -	圖畫關					strong hydrocarbon odor.	g. a.nea component, moist,					
[}:::::]								
「 ₋							·					
- 20 -												
┝╶┤												
- 22 -	圖三圖			 								
[
- 24 -	F::-				$\vdash \vdash \vdash$,						



Project No. <u>02/403366</u> Date drilled / Project CHV/1790 Long Beach/PCH Location 1790 Long Beach Blvd. Date drilled 11/13/92 Well Completion Sample ID Blow Count/ % Recovery Class. Depth (ft.) PID (ppm) Graphic . og Description SCS (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50% 24 SAND: Light olive gray, about 100% fine grained component; moist, moderate hydrocarbon odor. 26 28 SP 30 32 End of boring. No groundwater encountered. Well set at 32 feet below grade. Slotted casing set from 32 feet to 7 feet below grade. Blank casing placed from 7 feet to 1.5 feet below 34 grade. Well annulus filled with sand from total depth to 6 feet below grade, overlain by 2 feet of hycrated bentonite pellets, overlain by 2 feet of cement to 1.5 fee: below grade. Well sealed with PVC cap and filled with sand to grade, capped with cold patch. 36 38 40 42 44 46 48 50 52 54 56

Drilling Log



Vapor Point VW-3

Location <u>1790 Long Beach</u> Surface Elev Top of Casing Screen. Dia <u>3 in.</u> Casing: Dia <u>3 in.</u> Filter Pack Material <u>#3 Mo</u>	h Blvd. Proje Total Hole Depth Water Level Initia Length 15 ft. Length 13.5 ft. Interev Sand Met	ct No. 32.0	Hollow-Stem Auger Permit # NR log By Garv Prange No. RG 3915 Descripti	
2- 0- 10- 18- 10- 18- 20- 22- 22-	Sam Blow X Rec	SOSO ASB SC SS	(Color, Texture, S Trace < 10%, Little 10% to 20%, Some 6-inch A/C Sandy SILT: Brown, about 95% silt, as grained sand; damp, no hydrocarbon of medium sand; very moist, no hydrocarbon sand; very moist, no hydrocarbon odor. Same as 6 feet except Olive gray. SAND: Olive, about 100% fine grained of hydrocarbon odor. SAND: Olive, about 100% fine grained of hydrocarbon odor.	cut 5% fine to medium cdor. It, about 15% clay, about 5% on odor. omponent; maist, moderate



Project CHV/1790 Long Beach/PCH Owner <u>Chevron Products Company</u> Project No. 021403366 Location 1790 Lona Beach Blvd. Date drilled <u>11/13/92</u> Well Completion Sample ID Blow Count/ % Recovery Class. Description PID (ppm) Graph!c Log SCS (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50% 24 26 28 SP 30 32 End of boring. No groundwater encountered. Well set at 32 feet below grade. Slotted casing set from 32 feet to 17 feet below grade. Blank casing placed from 17 feet to 1.5 feet below grade. Well annulus filled with sand from total depth to 15 feet below grade, overlain by 2 feet of hydrated bentonite 34 pellets, overlain by 13 feet of cement to 1.5 feet below grade. Well sealed with PVC cap and filled with sand to grade, capped 36 with cold patch. 38 - 40 42 44 46 48 50 52 54 56

Drilling Log



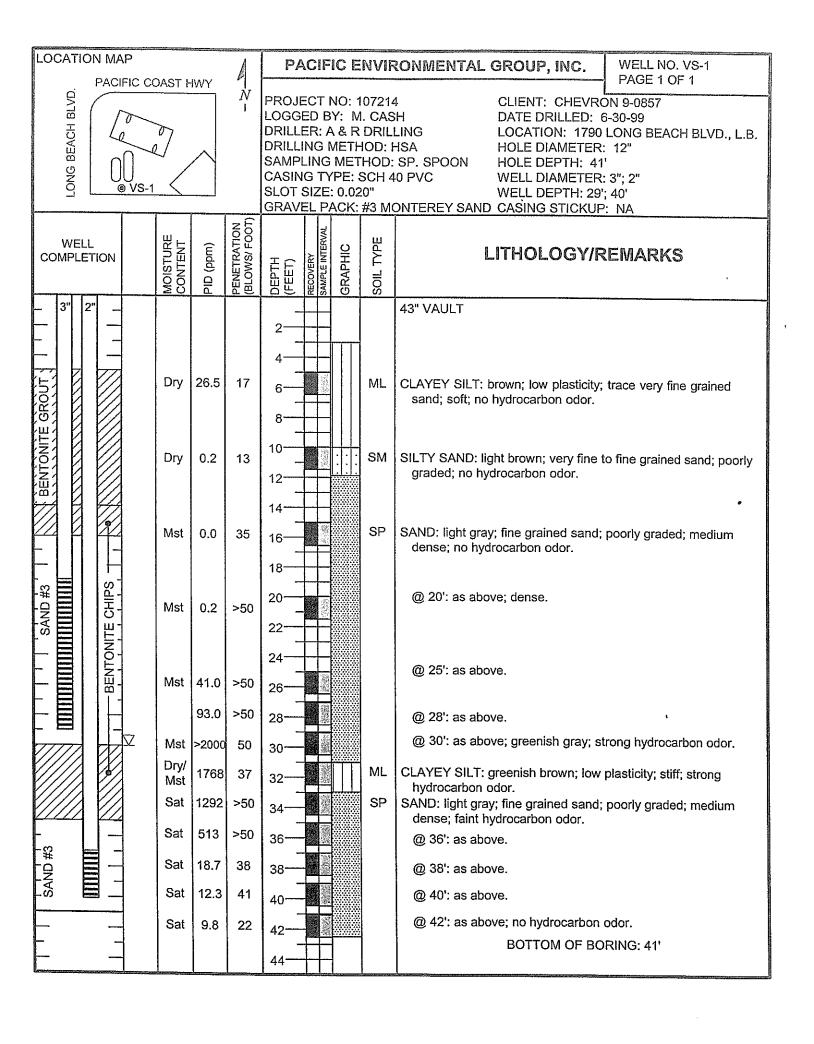
Vapor Point VW-4

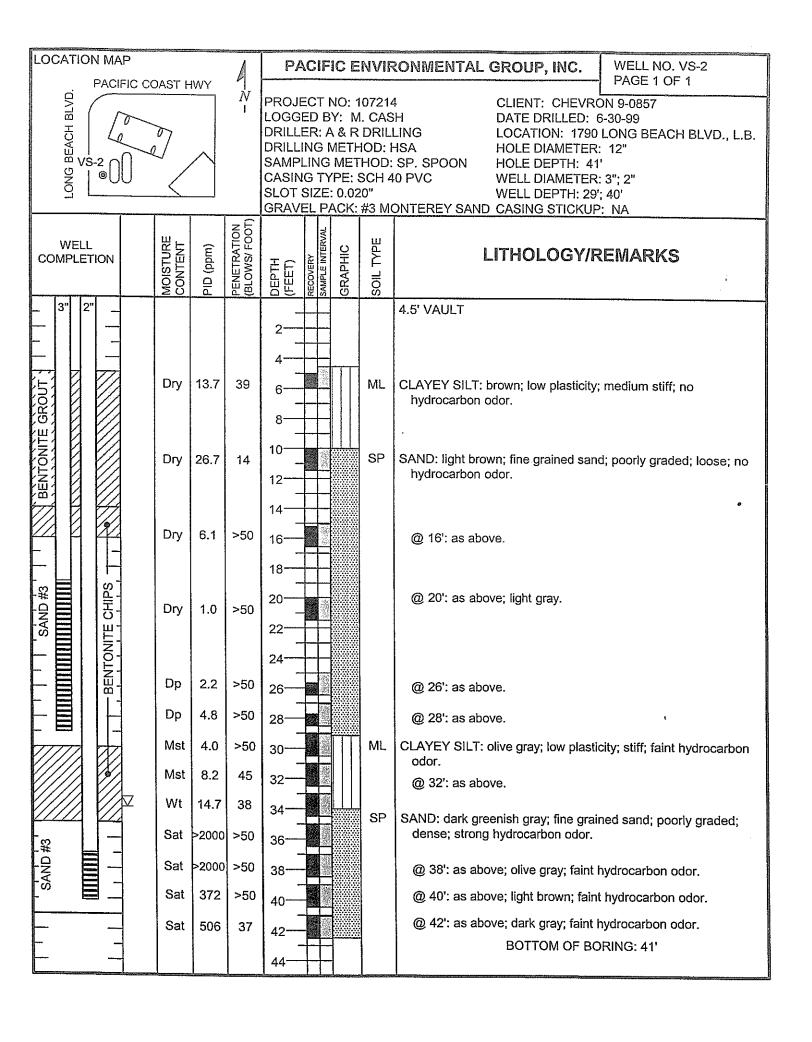
Project <u>CHV</u>	'1790 Lon O Long Ri	<u>a Beac</u> each B	h/PCH	Draina	0	Owner Chevron Products Company	See Site Map For Boring Location				
Location 1790 Long Beach Blvd. Project No. 021403366 Date drilled 11/13/92 Surface Elev Total Hole Depth 33.0 ft. Diameter 0.67 ft. COMMENTS:											
							COMMENTS:				
Top of Casing Water Level Initial Static											
Screen: Dia 3 in. Length 15 ft. Type/Size .020 in. Hand augered to 5 feet below grade. No											
Casing, that the Length 10.5 ft. Type School, 40 FVC Underground utilities											
Filter Pack Material #3 Monterev Sand Rig/Core Type CME-55 encountered.											
Drilling Company <u>A & R Drilling</u> Method <u>Hollow-Stem Auger</u> Permit # <u>NR</u>											
Driller <u>G. Mark Smith</u> Log By <u>Garv Pranae</u>											
Checked By	Paul Parm	entier 		_ Licer	ise N	10. RG 3915 Employer					
Depth (ft.)	oletlon TD	(wad	sample IO low Count/ Recovery	Graphic Log	Class.	Descripti	on				
3	Comp	-e	Samp Blow X Rec	Gra L	nscs	(Color, Texture, S Trace < 10%, Little 10% to 20%, Some	tructure) 20% to 35%. And 35% to 50%				
2-	<u> </u>	!	отшк			ř					
-	The state of the s										
- 0 -	18.48		1			6-inch A/C	1				
		į		- -	ASD	Silty SAND: Light olive brown, about 6:	5% fine sand, about 25%				
	<u> </u>	, and a second		$\left[\cdot\right]\left[\cdot\right]\left[\cdot\right]$		silt, about 5% clay, about 5% medium 🤢	and and fine gravet (1/4").				
- 2 -]-],[-],[-]		moist, no hydrocarbon odor, contains	esphalt fragments.				
	# # P										
	6,1										
	7.4				SM						
	<	- 1									
- 6 - (<)	7 <].]-[.]-].	.						
1 1	4,1				·						
	74										
- 8 - 3	<			1.11.11		Sandy SILT: Olive gray, about 65% slit	, about 30% very fine				
	× <				ļ	sand, about 5% clay; very moist, slight	hydrocarbon odor.				
- 10 <	6.4		- Transacture								
	\ r		#								
├ - <	<				ML						
- 12 - (\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \										
'- \rangle 1	μų										
f 11.5.1	1 ,₹				\dashv	SAND: Olive gray, about 95% fine sand	. about 5% silt; moist,				
- 14 - 62	220					moderate hydrocarbon odor.					
<u> </u>											
				{:::::: 							
- 16 -	***]]						
			ļ								
19											
- 18 -	∄										
- ₩3	=[∰]				\$P						
- 20 -	副圖		ŀ			CAND: Olivo oray = have 100% file =					
	=[<u> </u>					SAND: Olive gray, about 100% fine grastrong hydrocarbon odor.	neu component; moist,				
<u>- 22 - </u>	=		į.								
			1,				1				
	≣ [∰]		ŀ								
- 24 - 21 -	<u>- 1:::-</u>			******							

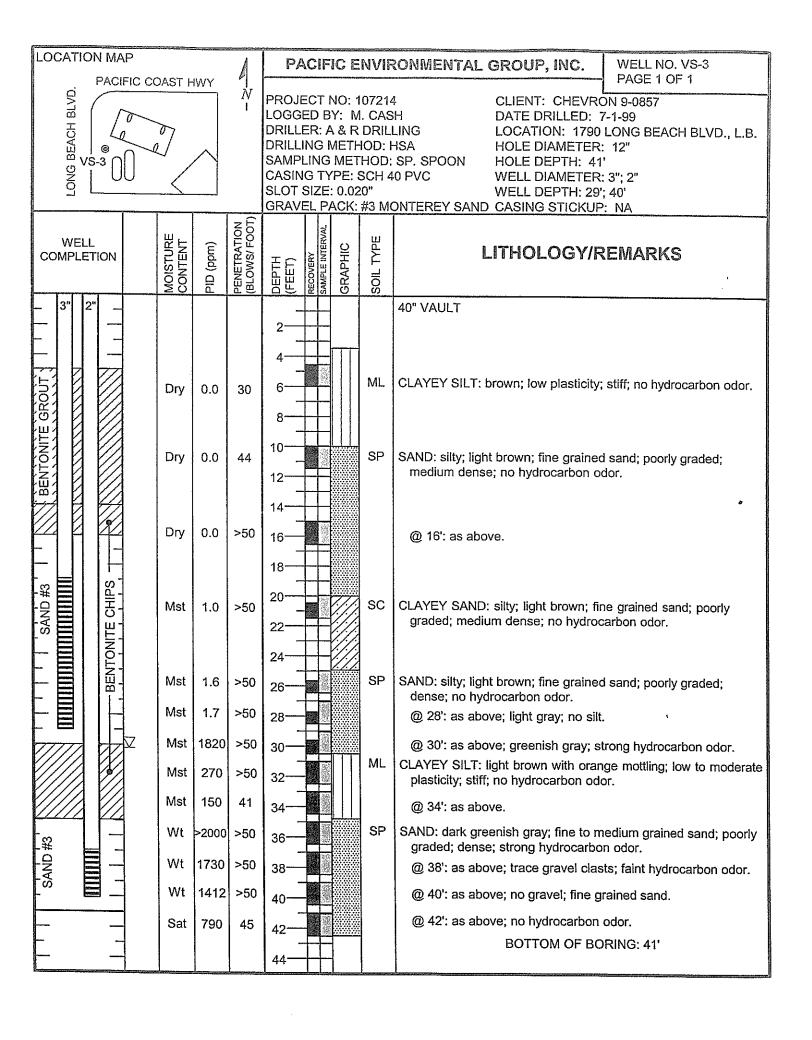


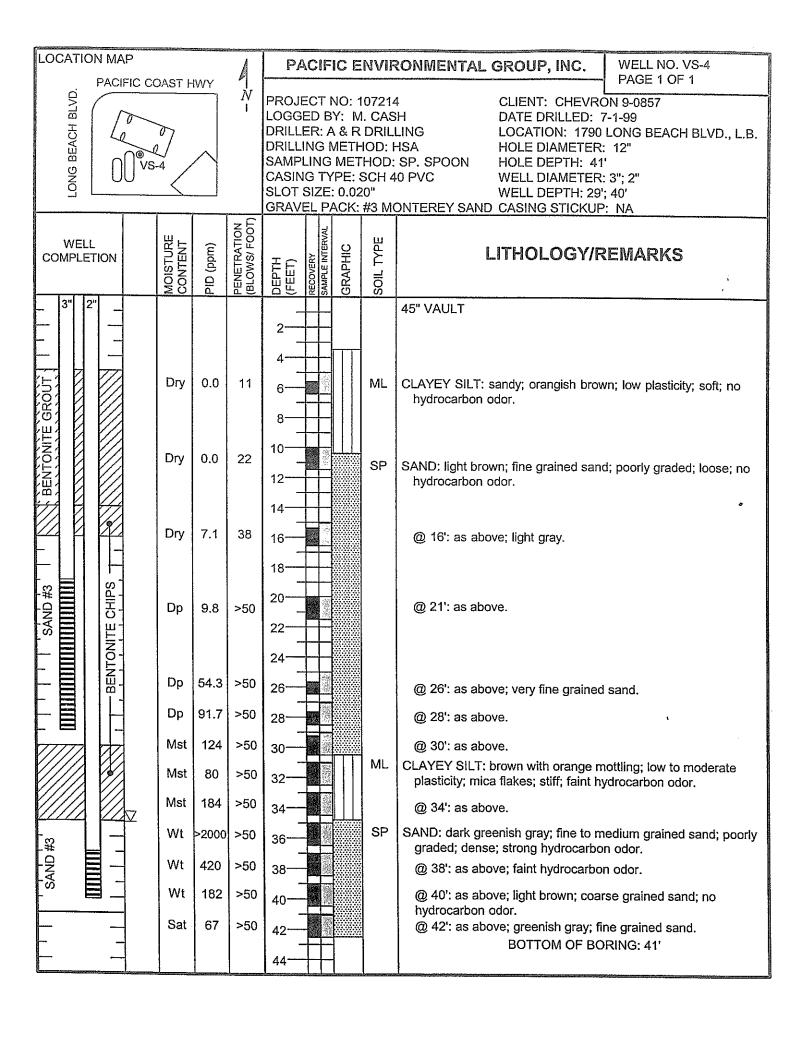
Vapor Point VW-4

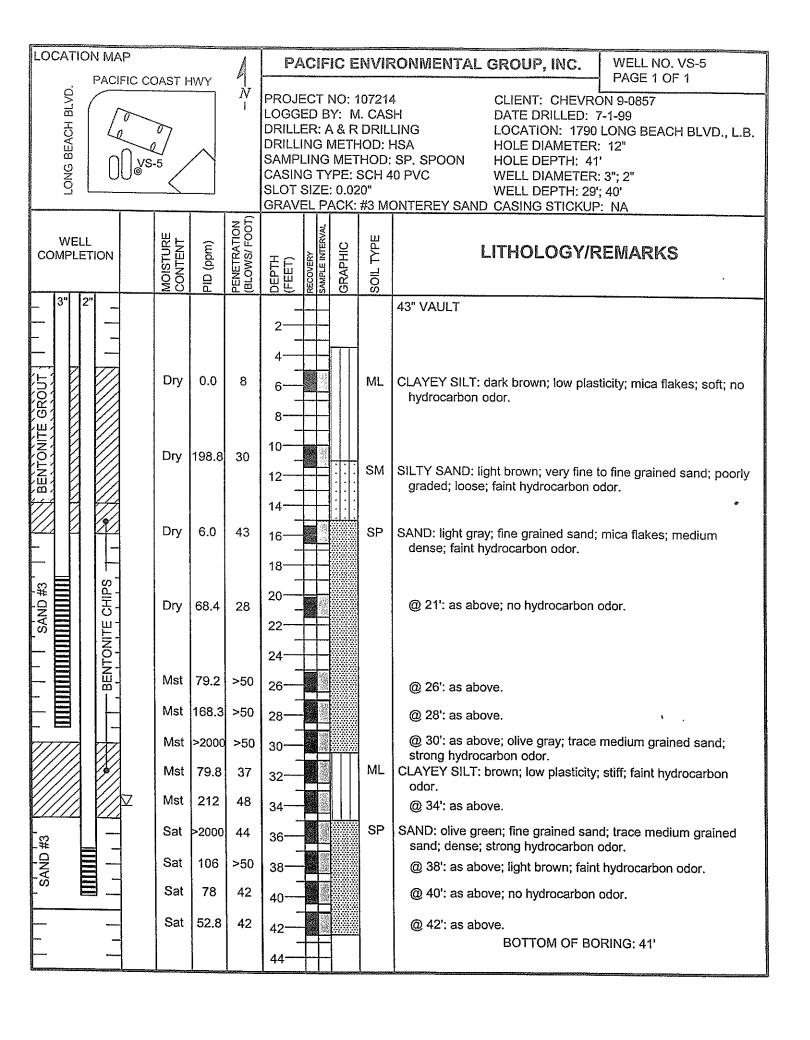
Project CHV/1790 Long Beach/PCH Owner Chevron Products Company Location 1790 Long Beach Blvd. Project No. 021403366 Date drilled <u>11/13/92</u> Sample ID Blow Count/ % Recovery Well Completion Class. Graphic Log PTO (MQQ) Description ISCS (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50% 24 26 28 SP 30 32 End of boring. No groundwater encountered. Well set at 33 feet below grade. Slotted casing set from 32 feet to 16 feet 34 below grade. Blank casing placed from 18 feet to 1.5 feet below grade. Well annulus filled with sand from total depth to 16 feet below grade, overlain by 2 feet of hydrated bentonite pellets, overlain by 14 feet of cement to 1.5 feet below grade. 36 Well sealed with PVC cap and filled with sand to grade, capped with cold patch. 38 40 42 44 46 48 50 52 54 56

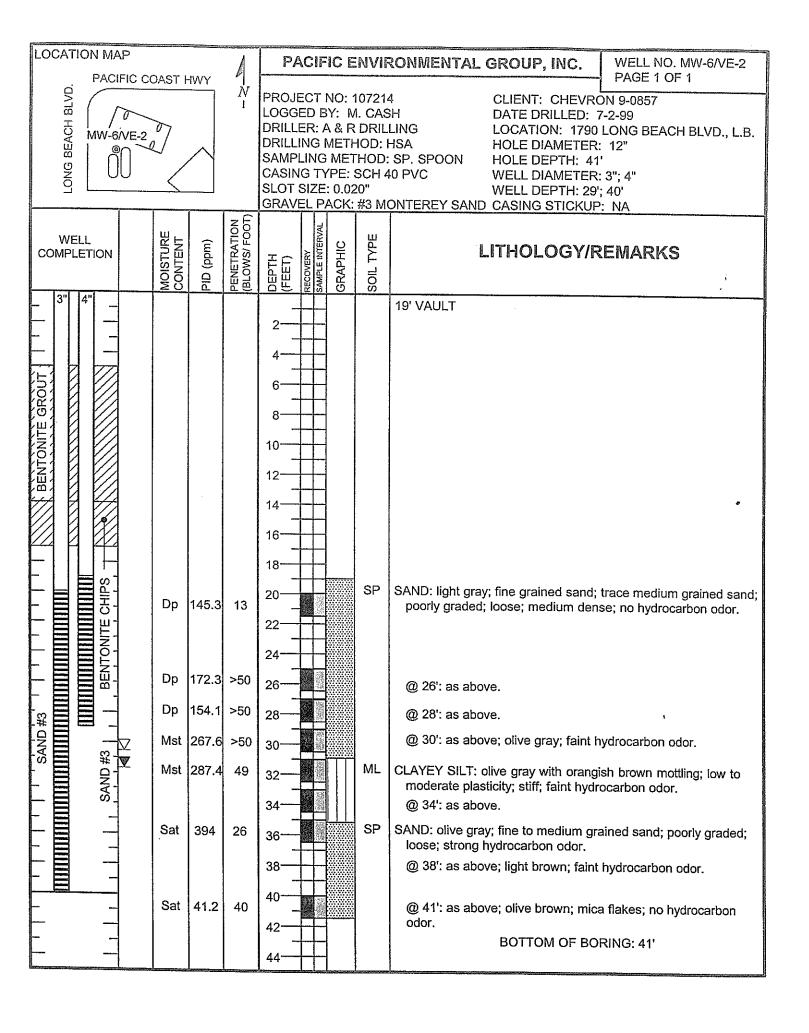


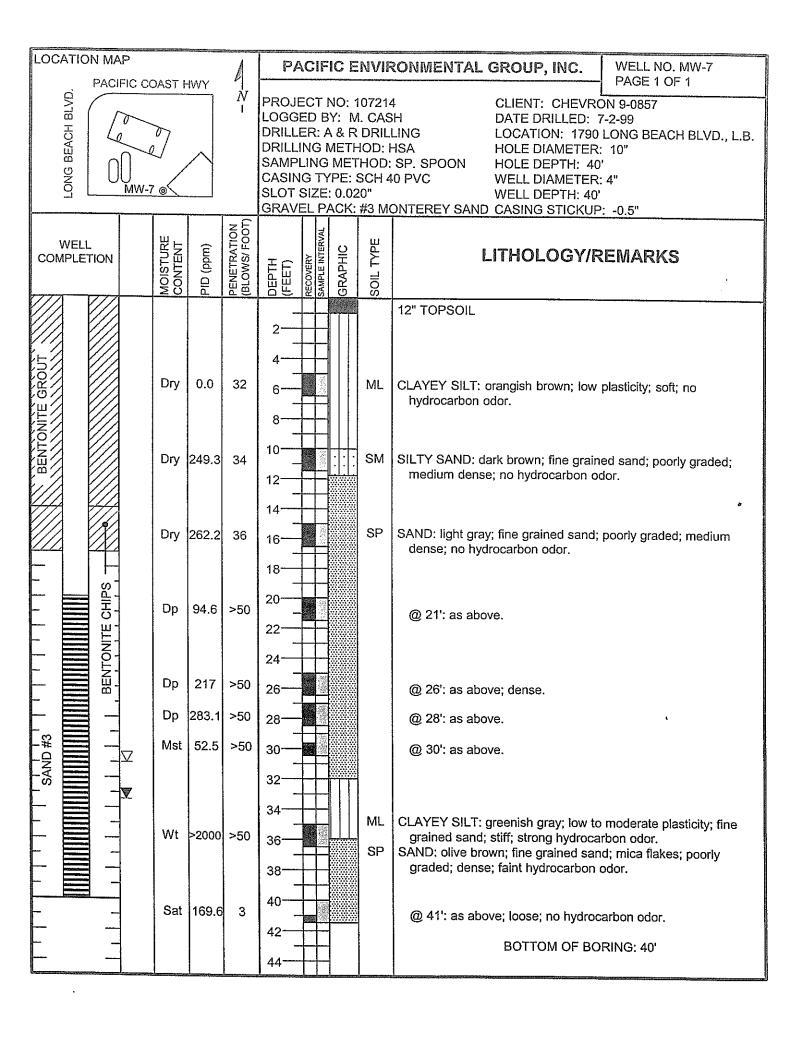














Long Beach, California Harding ESE Project No. 641023.0857

LOG OF BORING B1

(Page 1 of 1)

Field Location

: Western DI

Date Logged By : 10/29/01 : C. Brendle

Total Depth of Boring : 31 feet Diameter of Boring : 8 inch

Backfill Material

: 8 inch

: Bentonite Chips

Drilling Co.

: West HazMat

Drilling Rig Drilling Method

: CME-85 : Hollow Stem Auger

Sampling Method

: Split Spoon

Hammer Weight (lbs.) : 140 Hammer Drop (in.) : 30

Hammer Drop (in.) : 30 Depth to Groundwater : NA

Vapor Meter

: PID (Mini Rae)

Surf. Seal Material : Concrete

Depth in Feet	Samples	Blows/ft.	Vapor Conc. (ppm)	Sample Type	Sample ID	USCS	GRAPHIC	DESCRIPTION
0						-		6" concrete at surface
5-						SM		SILTY SAND, fine grained, brown, moist, some gravel
-			17	Ring	B1-7'	ML		SILT, brown, moist, trace fine grained sand
10-			14	Ring	B1-10'	SM		SILTY SAND, poorly graded, fine grained, brown, moist
15		*	13	Ring	B1-15'			SAND, poorly graded, fine grained, dark tan, moist, trace silt
20 - - -		m	19	Ring	B1-20'	SP		SAND, poorly graded, fine grained, brown, moist, trace clay
25 - -		-	21	Ring	B1-25'			SAND, poorly graded, fine grained, dark tan, moist, trace silt
30 -			16	Ring	B1-30'			SAND, poorly graded, fine grained, dark tan, moist
35 —								Angle boring - 15 degrees from vertical 30 feet of auger True vertical depth approximately 29 feet Groundwater not encountered

California Registered Seologist No. 6109

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Long Beach, California Harding ESE Project No. 641023.0857

LOG OF BORING B2

(Page 1 of 1)

Field Location

: Eastern DI

Date Logged By : 10/29/01 : C. Brendle

Total Depth of Boring : 31 feet Diameter of Boring

: 8 inch

: Bentonite Chips

Backfill Material

Drilling Co. Drilling Rig : West HazMat : CME-85

Drilling Method

: Hollow Stem Auger

Sampling Method

: Split Spoon Hammer Weight (lbs.) : 140

Hammer Drop (in.) : 30

Depth to Groundwater: NA

Vapor Meter

: PID (Mini Rae)

Surf. Seal Material

: Concrete

0		Blows/ft.	Vapor Conc. (ppm)	Sample Type	Sample ID	nscs	GRAPHIC	DESCRIPTION
								6" concrete at surface
5						SM		SILTY SAND, fine grained, brown, moist, some gravel
			13	Ring	B2-7'		the control of the co	SILT, brown, moist, trace fine grained sand
10			11	Ring	B2-10'	ML		SANDY SILT, fine grained sand, brown, moist
15			12	Ring	B2-15'	SM		SILTY SAND, poorly graded, fine grained, olive brown, moist
20-			13	Ring	B2-20'			SAND, tan, moist, trace silt
25-			11	Ring	B2-25'	SP		SAND, dark tan, moist, trace silt
30-		••	13	Ring	B2-30'			Same As Above
35								Angle boring - 15 degrees from vertical 30 feet of auger True vertical depth approximately 29 feet Groundwater not encountered
40-	-					,		

California Registered Geologist No. 6109



Long Beach, California Harding ESE Project No. 641023.0857

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LOG OF BORING B3

(Page 1 of 1)

Field Location

: Northernmost Former DI

Date Logged By : 10/29/01 : C. Brendle

Total Depth of Boring Diameter of Boring

g:31 feet :8 inch

Backfill Material

: Bentonite Chips

Drilling Co.

: West HazMat : CME-85

Drilling Rig Drilling Method

: Hollow Stem Auger

Sampling Method

: Split Spoon

Hammer Weight (lbs.) : 140 Hammer Drop (in.) : 30

Hammer Drop (in.) : 30 Depth to Groundwater : NA

Vapor Meter

: PID (Mini Rae)

Surf. Seal Material : Concrete

Depth ìn Feet	Samples	Blows/ft.	Vapor Conc. (ppm)	Sample Type	Sample ID	nscs	GRAPHIC	DESCRIPTION
0-								6" concrete at surface
5 -						SM		SILTY SAND, fine grained, brown, moist, some gravel
1		19	21	Ring	B3-7′	ML	Annual An	SILT, brown, very stiff, moist, some fine grained sand
10-		22	19	Ring	B3-10'			SAND, poorly graded, fine grained, light brown, medium dense, moist some silt
15 — -		22	18	Ring	B3-15'	SP		SAND, poorly graded, fine grained, tan, medium dense, moist, common silt
20 -		33	21	Ring	B3-20'			Same As Above
25 —		36	17	Ring	B3-25'			SAND, poorly graded, fine grained, light brown, dense, moist
30-	\boxtimes	>50	45	Ring	B3-30'	ML	Agent	SANDY SILT, fine to medium grained sand, olive, hard, moist
-								Total Depth of Boring: 31 feet Groundwater not encountered
35								
nhumantum.								
40								

California Registered Geologist No. 6109



Long Beach, California Harding ESE Project No. 641023,0857

LOG OF BORING B4

(Page 1 of 1)

Field Location : Northern Former DI

Date : 10/29/01 Logged By : C. Brendle

Total Depth of Boring : 31 feet Diameter of Boring : 8 inch

Backfill Material : Bentonite Chips Drilling Co.

: West HazMat : CME-85

Drilling Rig Drilling Method

: Hollow Stem Auger

Sampling Method

: Split Spoon

Hammer Weight (lbs.) : 140 Hammer Drop (in.)

: 30 Depth to Groundwater: NA

Vapor Meter Surf. Seal Material : PID (Mini Rae)

: Asphalt

на	rding E	SE Pro	ject No.	641023.08	357 Bac	Knii Matenai	: Bei	ntonite Chips
Depth in Feet	Samples	Blows/ft.	Vapor Conc. (ppm)	Sample Type	Sample ID	USCS	GRAPHIC	DESCRIPTION
0-		****						6" asphalt at surface
5—						SM		SILTY SAND, fine grained, brown, moist, some gravel
-		28	11	Ring	B4-7'	X		SILT, brown, very stiff, moist, trace fine grained sand
10		22	8	Ring	B4-10'	MIC		SANDY SILT, fine grained sand, brown, very stiff, moist
15-		31	7	Ring	B4-15'			SAND, poorly graded, fine grained, tan, dense, moist, trace silt
20 - -		31	6	Ring	B4-20'	SP		Same As Above
- 25 — -		31	10	Ring	84-25'			SAND, poorly graded, fine grained, tan, dense, moist, some medium grained sand, trace silt
30 —	\boxtimes	45	6	Ring.	B4-30'	SM		SANDY SILT, fine grained sand, olive brown, hard, moist
35 — - - -								Total Depth of Boring: 31 feet Groundwater not encountered
40 —								

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Long Beach, California Harding ESE Project No. 641023.0857

LOG OF BORING B5

(Page 1 of 1)

Field Location

Date

: Western Former DI : 10/29/01

: C. Brendle

Logged By Total Depth of Boring : 31 feet

Diameter of Boring : 8 inch Backfill Material

. Bentonite Chips

Drilling Co.

: West HazMat

Drilling Rig

: CME-85

Drilling Method Sampling Method : Hollow Stem Auger : Split Spoon

Hammer Weight (lbs.): 140

Hammer Drop (in.)

Depth to Groundwater: NA

Vapor Meter

: PID (Mini Rae)

Surf. Seal Material

: Concrete

Depth in Feet	Samples	Blows/ft.	Vapor Conc. (ppm)	Sample Type	Sample ID	nscs	GRAPHIC	DESCRIPTION
0 - - 5 -	d year and an annual management					SM		6" concrete at surface SILTY SAND, brown, moist, some gravel
-		17	14	Ring	B5-7'	ML		SANDY SILT, fine grained sand, brown, very stiff, moist
10-		20	15	Ring	B5-10'	SM		SILTY SAND, poorly graded, fine grained, brown, dense, moist
15		25	13	Ring	B5-15'	SP		SAND, poorly graded, fine grained, brown, dense, moist, trace silt
20-		32	19	Ring	B5-20 [,]	ML		SILT, brown, hard, moist, some fine grained sand, trace clay
25		32	18	Ring	B5-25'	SP		SAND, poorly graded, fine grained, tan, dense, moist, some silt
30-		49	24	Ring	B5-30'	SM		SILTY SAND, poorly graded, fine grained, olive, dense, moist, trace clay
35-								Total Depth of Boring: 31 feet Groundwater not encountered

California Registered Reologist No. 6109

12-07-2001 p:/ESE/CHEVRON.MKG\9-0857 Long Beach\B5 bor

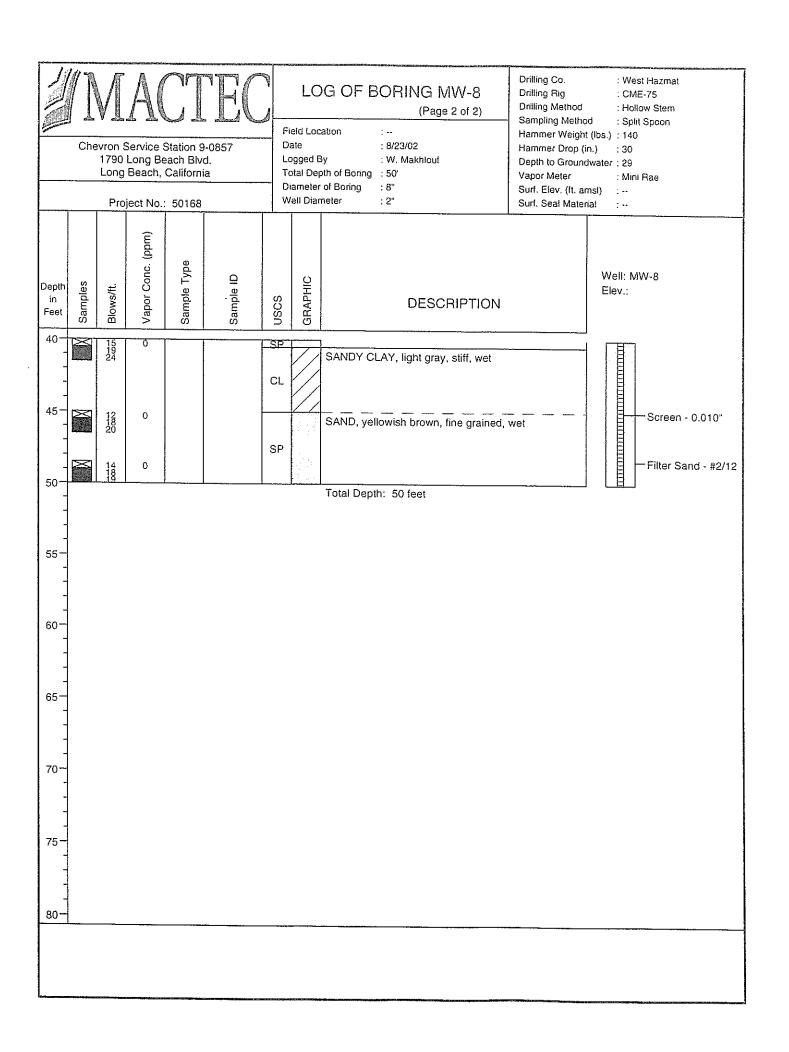
40

Drilling Co. : West Hazmat LOG OF BORING MW-8 Drilling Rig : CME-75 Drilling Method : Hollow Stem (Page 1 of 2) Sampling Method : Split Spoon Field Location Hammer Weight (lbs.) : 140 Chevron Service Station 9-0857 Date : 8/23/02 Hammer Drop (in.) : 30 Logged By : W. Makhlouf 1790 Long Beach Blvd. Depth to Groundwater : 29 Long Beach, California Total Depth of Bonng : 50" Vapor Meter : Mini Rae Diameter of Boring : 8" Surf. Elev. (ft. amsl) Well Diameter : 2" Project No.: 50168 Surf. Seal Material Vapor Conc. (ppm) Sample Type Well: MW-8 Sample ID GRAPHIC Blows/ft. Depth Elev.: USCS in **DESCRIPTION** Feet 3" ASPHALT Concrete 3' ROAD BASE GP SAND, yellowish brown, fine grained, moist 13 15 17 0 MW8-51 same 9 10 12 0 MW8-10⁴ Bentonite Grout Blank Casing 15 0 MW8-15' same 7 10 13 SP 20 SAND, pale gray, fine grained 17 23 30 0 MW8-20* Bentonite Seal 25 same 28 36 50 0 MW8-25' 30 0 MW8-301 SANDY CLAY, pale gray CL Screen - 0.010" 35 Filter Sand - #2/12 17 21 35 0 SAND, light gray, fine grained, wet, slight odor

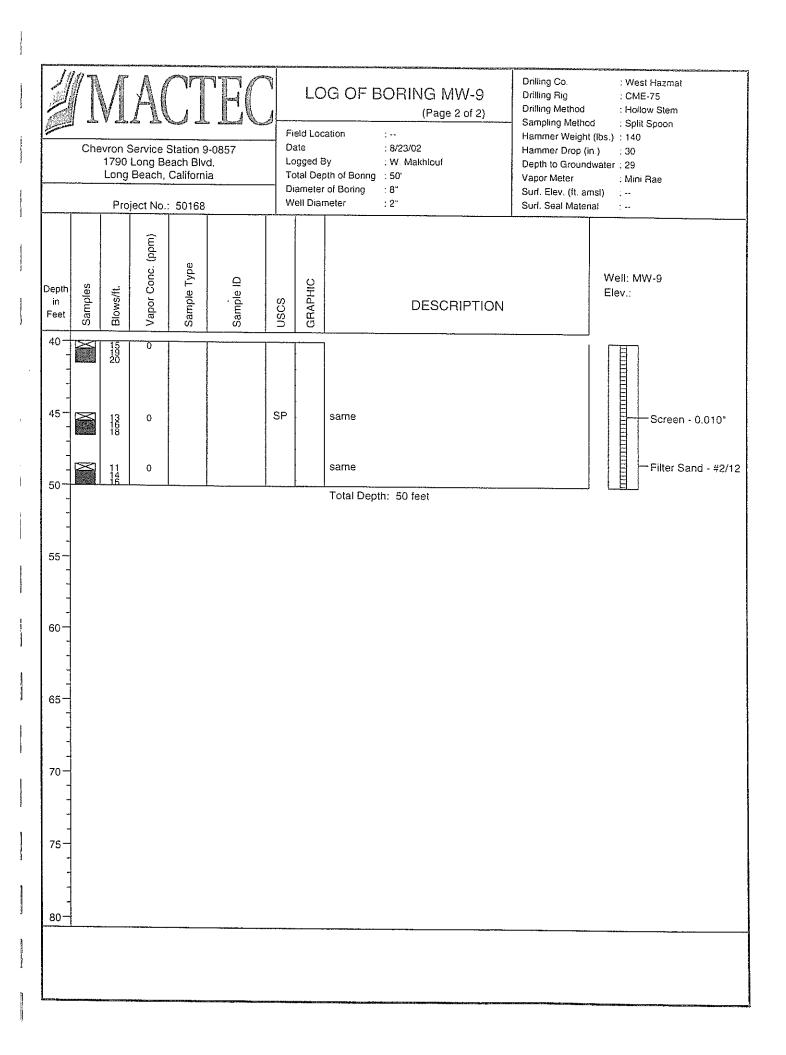
SP

same, no odor

40



Drilling Co. : West Hazmat LOG OF BORING MW-9 Dalling Rig : CME-75 **Drilling Method** : Hollow Stem (Page 1 of 2) Sampling Method Split Spoon Field Location : --Hammer Weight (lbs.): 140 Chevron Service Station 9-0857 Date : 8/23/02 Hammer Drop (in.) Logged By 1790 Long Beach Blvd. : W. Makhlouf Depth to Groundwater: 29 Long Beach, California Total Depth of Boring : 50° Vapor Meter : Mini Rae Diameter of Boring : 8" Surf. Elev. (ft. amsl) Well Diameter Project No.: 50168 : 2" Surf. Seal Material ; ... Vapor Conc. (ppm) Sample Type Well: MW-9 ₽ GRAPHIC Depth Samples Blows/ft. Sample I Elev.: uscs íΠ DESCRIPTION Feet 0. 3" ASPHALT Concrete 3' ROAD BASE GP Bentonite Chips SAND, yellowish brown, fine grained, moist 7 8 10 0 MW9-5' 10 10 10 12 0 MW9-10' same Bentonite Grout Blank Casing 15 10 12 13 0 same MW9-15' 20 same 0 MW9-20' Bentonite Seal SP 25 21 31 46 SAND, gray, fine grained, wet, slight odor 0 MW9-25' V 30 21 31 36 same, yellowish brown, wet, no odor 0 MW9-30' Screen - 0.010" 35 14 18 24 0 same Filter Sand - #2/12 40 same



APPENDIX B LACDPW WELL SURVEY DATA

LA County Department of Public Works Groundwater Data

well#	suff.	state well #	page	grid	last measured	g.s. elv.	depth to water	status	use	owner
<u>380</u>	Q		795	B4	9/28/1987	12.9	22.8	inactive	g.w. observation	L.A.C.F.C.D.
<u>380</u>	Р	4S13W26F05	795	B4	4/17/1997	11.6	90.6	inactive	g.w. observation	L.A.C.F.C.D.
<u>380</u>	S	4S13W26P07	795	B5	4/21/1997	7.7	16.2	inactive	g.w. observation	L.A.C.F.C.D.
<u>380</u>	Т	4S13W26P08	795	B5	4/21/1997	7.7	17.8	inactive	g.w. observation	L.A.C.F.C.D.
<u>381</u>	K	4S13W35B03	795	B5	4/6/2005	6.7	13.2	active	g.w. observation	L.A.C.F.C.D.
<u>381</u>	L	4S13W35B04	795	B5	4/6/2005	6.7	9.7	active	g.w. observation	L.A.C.F.C.D.
<u>381</u>	J	4S13W35B02	795	B5	4/6/2005	6.7	52.3	active	g.w. observation	L.A.C.F.C.D.
<u>381</u>		4S13W35B01	795	B5	11/30/1994	7.0	12.0	inactive	none	Pioneer Pacific
<u>381</u>	С	4S13W35F01	795	B6	4/13/1998	9.0	9.6	inactive	none	Pat Wilson
<u>390</u>	Q		795	C4	9/28/1987	27.3	28.8	inactive	g.w. observation	L.A.C.F.C.D.
<u>400</u>		4S13W25F01	795	C4	4/7/2005	13.1	14.5	active	g.w. observation	L.A.C.F.C.D.
<u>390</u>	Р	4S13W26R02	795	C4	10/16/1988	28.0	83.0	destroyed	g.w. observation	L.A.C.F.C.D.
<u>390</u>	R	4S13W26R03	795	C5	10/13/1994	28.7	37.9	inactive	g.w. observation	L.A.C.F.C.D.
<u>392</u>	G	4S13W35J01	795	C6	4/24/1997	22.7	31.8	inactive	g.w. observation	L.A.C.F.C.D.
<u>392</u>	Н	4S13W35J02	795	C6	4/3/2002	25.0	27.7	active	g.w. observation	L.A.C.F.C.D.